

# Mirror mania

Edited and  
compiled by  
Sally Karslake

An illustrated  
guide to building,  
cruising and racing  
the world's most  
popular family  
centreboard  
dinghy



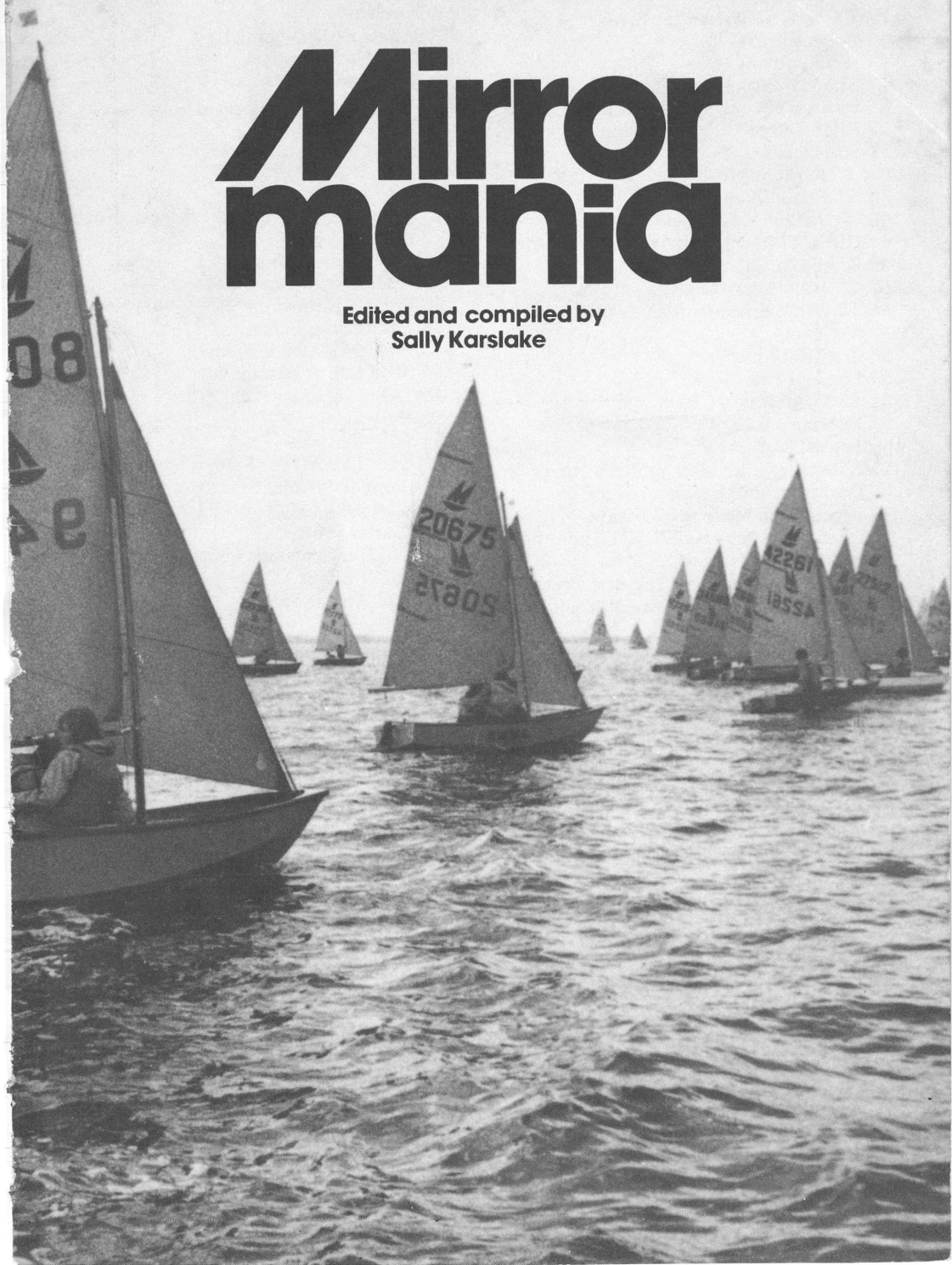






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## Illustrations

- Page 1, 4/5, 6/7, 9 Arthur Sidey  
 10 Daily Mirror  
 13 Les Goodwin  
 17 Frank Webb  
 25 David Whittock's boat 'Phlasher'  
 29 Peter Thomas  
 31 Stephens & Latham  
 32, 35 Arthur Sidey  
 36/37 Frank Chapman  
 40, 41 Arthur Sidey  
 47 Carew Castle/British Tourist Authority  
 48 Pembroke/Picturepoint Ltd  
 51, 52 Sally Karslake  
 56/57 Forth Bridge/British Tourist Authority  
 58 Crail Harbour  
 59 Elie and Bass Rock  
 62/63 St Andrew's Castle  
 68 Hadrian's Wall, Cumberland/British Tourist Authority  
 71 Lindsay Walker with author's Mirror on Dover Harbour beach  
 72 Packing the Mirror at 7.00 am  
 Peter and Angus Holliday, 15 minutes out from Dover Harbour  
 73 Crossing the 'up' lane (nearest France)  
 76 David Whittock's boat 'Leo'/Yachting World  
 79 Brownsea Island  
 80 Wareham  
 82 Bramber Engineering  
 88 Tony Hutchings  
 91 Hugh Cundall  
 95 Crail  
 96/97 St Andrews  
 102 Frank Webb  
 104, 105 John Harrison  
 116, 117 Bentley Moss  
 123 A deserted island in the Aegean/Hugh Jones  
 126/127 Frank Chapman  
 129, 131, 134 Arthur Sidey  
 136 Frank Chapman  
 136/137 Charles Scott  
 140, 141, 142 Arthur Sidey  
 144 Irish Mirror Association  
 146/147, 150/151 Arthur Sidey  
 152 Mary Sidey  
 155 Sally Karslake  
 159, 160, 168 Arthur Sidey  
 170 Herne Bay/Colin Sproxton  
 172, 174, 180/181, 190/191 Arthur Sidey  
 194 Charles Scott  
 204, 205 Terylene sails being made in the loft/ICI Fibres  
 207, 208 Arthur Sidey

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# CONTENTS

## INTRODUCING THE MIRROR DINGHY

As it was in the beginning . . . *Victor Shaw/6*

## BUILDING AND CONSTRUCTION

Hints for builders. *Peter Taylor and David Oakes/11*

Buoyancy hints for builders. *The Association Committee/16*

When you capsize, do you get that sinking feeling? *John Weedon/17*

Polyester Adhesives. *International Yacht Paints/18*

Timber, its properties, preparation and preservation. *International Yacht Paints/19*

Compression or tension cracking. *International Yacht Paints/22*

Painting and varnishing by conventional methods. *International Yacht Paints/23*

Some helpful gadgets. *P. A. Watson/26*

Motorcycling mariners. *Peter Thomas/28*

## FITTING OUT

Rigging and spars. *Peter Barnes/31*

The Hull. *Derek Beere/33*

Centreboard and rudder. *John Reece/34*

Sails. *Roy Partridge/34*

Sail setting. *Raymond Jeckells/38*

## CRUISING YARNS

Holidays in the sun. *Alec Farmer/42*

A fishy story. *Ginger Moore/45*

Pembrokeshire. *Donald M. Forbes/46*

The Mahogany Tiller. *Ginger Moore/49*

A seamanlike rig — for a Mirror? *Sally Karslake/50*

We don't have this trouble on our gravel pit. *Peter Thomas/53*

Cruise around Fife. *Russell Gordon, Jock Blair and Nick Lindsay/54*

The Boy. *John Hayward/64*

Son of Jaws. *Peter Thomas/65*

Love swells like the Solway but ebbs like its tide. *Ean McDonald/67*

Excusez-moi, est ce que c'est Sangatte?

*Norman Barron/71*

Crystal Palace or bust. *Peter Thomas/75*

Three days in Poole Harbour. *Patrick Beatt and Mark Hayter/77*

## PRACTICAL HINTS FOR CRUISERS

On the subject of trailing. *Frank Webb/81*

Towing for two boat families. *Jack White/83*

Outboard bound. *Percy Blandford/84*

The iron topsail. *Peter Booth/86*

Joys of outboarding. *Peter Marks/87*

Further joys of outboarding. *Tony Hutchings/88*

The Mirror and its engine — abroad. *Hugh Cundall/90*

In praise of (a) sail. *Laurie Jones/91*

Cats. *Ean McDonald/93*

Notes on a 65 mile weekend cruise. *Nick Lindsay/95*

Expeditions. *Bob Fewtrell/99*

Peter Barnes hove to/99

Cold. *John Stevens/100*

Capsize drill. *Roy Liddington/102*

Reefing. *John Harrison/104*

Single pleasures. *Vernon Milsom/105*

The handyman. *Ian Wilkinson/106*

Collision course. *Michael Pocock/108*

Heavy weight required. *Peter Maltby/109*

Anchors aweigh. *Bentley Moss/110*

Chutes, anchors and fish. *Russell Gordon/112*

The very young . . . *Sally Karslake/114*

. . . and the young. *Bentley Moss/115*

Tackless sailing. *Peter Barnes/117*

Winds and weather. *Peter Sowden/120*

Taking your Mirror abroad. *Hugh Jones/122*

Cruiser Associations. *Mike Coleman/124*

## RACE TUNING

What is meant by 'One Design'. *Victor Shaw/128*

A racing machine. *Graham Ellis/130*

Reflections on tuning. *Nick Hodshon/132*

Centreboarding. *John Reece/135*

On with the motley. *Peter Thomas/136*

Spinnakers. *Ted Wilson/138*

Thoughts on getting a crew. *Stan Wilson/143*



## RACE WINNING TECHNIQUES

More miles to the galleon. *Peter Barnes/145*

Improve your figure. *Peter Barnes/147*

Roll tacking. *Roy Partridge/149*

Thank you, dear Father Christmas. *Michael McNamara/149*

Waves. *Peter Barnes/151*

You can't capsize a Mirror. *Hugh Cundall/156*

Down with the spinnaker. *Harry Taylor/157*

Doctor, Doctor. *Michael McNamara/161*

Windshifts. *D. J. Derby/162*

Proper course. *Ron Burdon/164*

Simple but effective. *David Howell/164*

Don't blame the tell-tail. *Gerald Rockett/165*

Is this your single problem? *Harry Taylor/166*

The human factor. *Deborah Evelyn/167*

Why here? *An anonymous silent watcher of Mirror sailing/169*

Sail your own race. *Adrian Hope/170*





Sailing fast. *Peter Bateman/173*  
 Racing single handed. *Bill Webber/176*  
 Water, water everywhere. *Richard Dalby/177*  
 Plain sailing. *Peter Thomas/178*  
 Wasser Bitte. *Harry Taylor/179*  
 20 Questions on the Racing Rules. *Deborah Evelyn/182*  
 Rounding a mark. *George Gibson/192*  
 Ask Aunt Harry. *Harry Taylor/193*  
 Winning. *John Taylor/194*

# **REPAIRS AND MAINTENANCE**

A new bottom. *Walter Maxfield/195*  
 Name transfers. *Kevin Wilkinson/196*  
 Split seam. *David Howell/196*  
 Cool it man! *Buccaneer/197*  
 Paint bubbles and loose screws. *Terry Cherrill/197*

Paint stripper on resin. *Frank Webb/198*  
 Paint stripping without wrecked fibre-glass. *Peter Anderson/198*  
 Guide to boat painting. *International Yacht Paints/198*  
 From navy to white. *Terry Cherrill/199*  
 Blisters. *Leslie Kinsman/199*  
 Sail cleaning. *Peter Bateman/200*  
 Repairs temporary . . . and simple. *Walter Maxfield/200*  
 Self bailers. *John Taylor/201*  
 Give your boat a fix. *Buccaneer/201*  
 Nail Heads. *Peter Barnes/201*  
 Hull repair. *Alex Scott/202*  
 Care and maintenance of Terylene sails. *ICI Fibres/204*  
 Replacing a transom. *Walter Maxfield/206*  
 Laying up. *Stuart Walker/206*





# INTRODUCING THE MIRROR DINGHY

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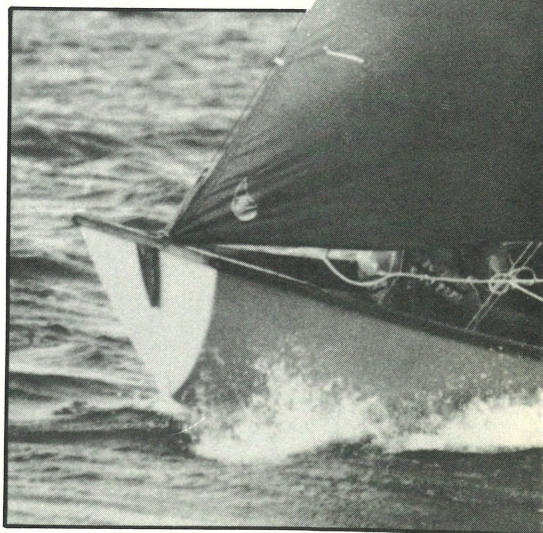
## As it was in the beginning...

by Victor Shaw

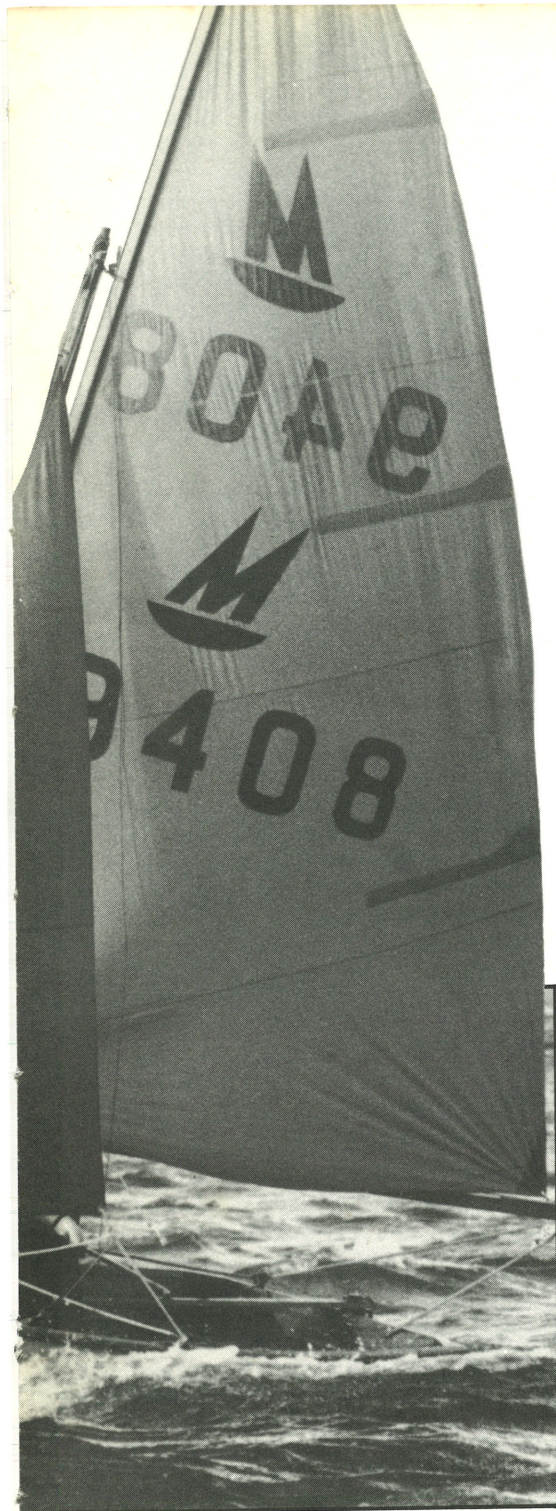
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Like a lot of brilliant ideas, the Mirror Dinghy literally 'just grewed.' In fact, the first seed was planted by a small boy who complained to his father that when the family dinghy was being used he never had the chance to sail because others always muscled in. Normally, that would have been the end of the matter but, in this case, the lad's father was Barry Bucknell who, characteristically, set about making a dinghy to increase the family fleet and train up another helm at the same time.

Always ready to discover an easier way of doing things, Barry adapted for his dinghy a system of construction used by Ken Littledyke to make KL canoes by joining adjacent panels with resin and glass fibre ribbon. When it was completed, it was seen by one of the Daily Mirror writers, Paul Boyle, who knew Barry Bucknell and being an ex-Navy man himself, chatted to him about the unusual design; as a result, news of it filtered into the Daily Mirror offices. At that time, the newspaper's Publicity Department was always ready to look at new ideas for promoting the newspaper and, after a lot of discussions I assume, it was thought that boats bearing the name 'Daily Mirror' might usefully keep the name before the public. However, newspapers are ever sensitive of their vulnerability towards complaints by readers and so the publicity executives needed to be absolutely positive that any boat bearing the name of the paper must be 100% safe and foolproof. It was an easy step, therefore, to consult an







expert within the Group, Bernard Hayman of Yachting World who, in turn, suggested that Jack Holt should cast his experienced eye over the project. Jack inspected the second prototype made by Barry and decided to retain the construction method and the general lines of the boat yet treat the hull concept as a radically new design; the third boat to be produced, therefore, looked quite different to its predecessors and yet boasted the same jaunty aspect.

Two of the most radical changes were contributed by the Daily Mirror Publicity staff who suggested the Viking red sails (the original prototypes had blue and white mainsails) and they also designed the insignia.

My first meeting with the Designers occurred just before the third prototype, and as it transpired, Mirror Dinghy No 1, came into being. It was nothing new for a newspaper



to promote a sailing dinghy, after all the News Chronicle had been very successful sponsoring the Enterprise and the Sunday Times had created the Signet, but I believe it was the first time that there had ever been such a very close liaison and a virtual control of marketing by the staff of a popular daily. It would have been very natural and understandable if Jack and Barry had viewed my entrance into the arena with a certain amount of courteous resentment, especially as my knowledge and experience of boats was absolutely nil. This, I found to my delight was not so.

There is a philosophy in the newspaper world which blithely accepts that all things are possible to the members of its staff, so it should have been no surprise when I was told to write the book of Sailing Instructions and also the book of Building Instructions. This would have been an extraordinarily difficult task had it not been for the generous help and advice given to me by the Bucknell/Holt partnership. For instance, I spent several weeks with Jack while Mirror No 1 was built in the most painstaking manner so every detail of the construction could be discussed and made clear for me to write it down for inclusion in the final assembly notes; some of the questions I asked must have been so basic that only a supreme effort of willpower must have prevented Jack from exploding with sheer disbelief.

At the Boat Show in 1963 the first three Mirror Dinghies were on show to be greeted by the sailing pundits and public with reactions that ranged from polite interest, through total apathy to scornful derision. Nevertheless, in the end the Design triumphed!

Before very long, there were enough owners to form an Association and in that year we held the first National Championship at Burnham-on-Crouch with 28 entries plus some Daily Mirror personnel who had been shanghai'd into stand-by duty in case spare crews were needed.

The driving force and ideas man behind the early events was the indomitable Beecher Moore who was constantly suggesting new ideas and venues all of which were calculated to keep the boat in the public eye. Typical of the daring ideas he put forward was the first European Championship which he said

should be held in France, so in 1966 a convoy of 40 cars and boats with police escort journeyed all the way to the Mediterranean to become the first major Class Association to organise such a Championship so far from home. The ultimate irony of this was that French television cameras moved into the area and we achieved several minutes in their National programmes BUT not a boat was seen, because their interest was showing to the French viewers the first cricket match played at Bandol, the teams being, if you can believe it, The Rest of the World captained by Beecher Moore and England, captained by me.

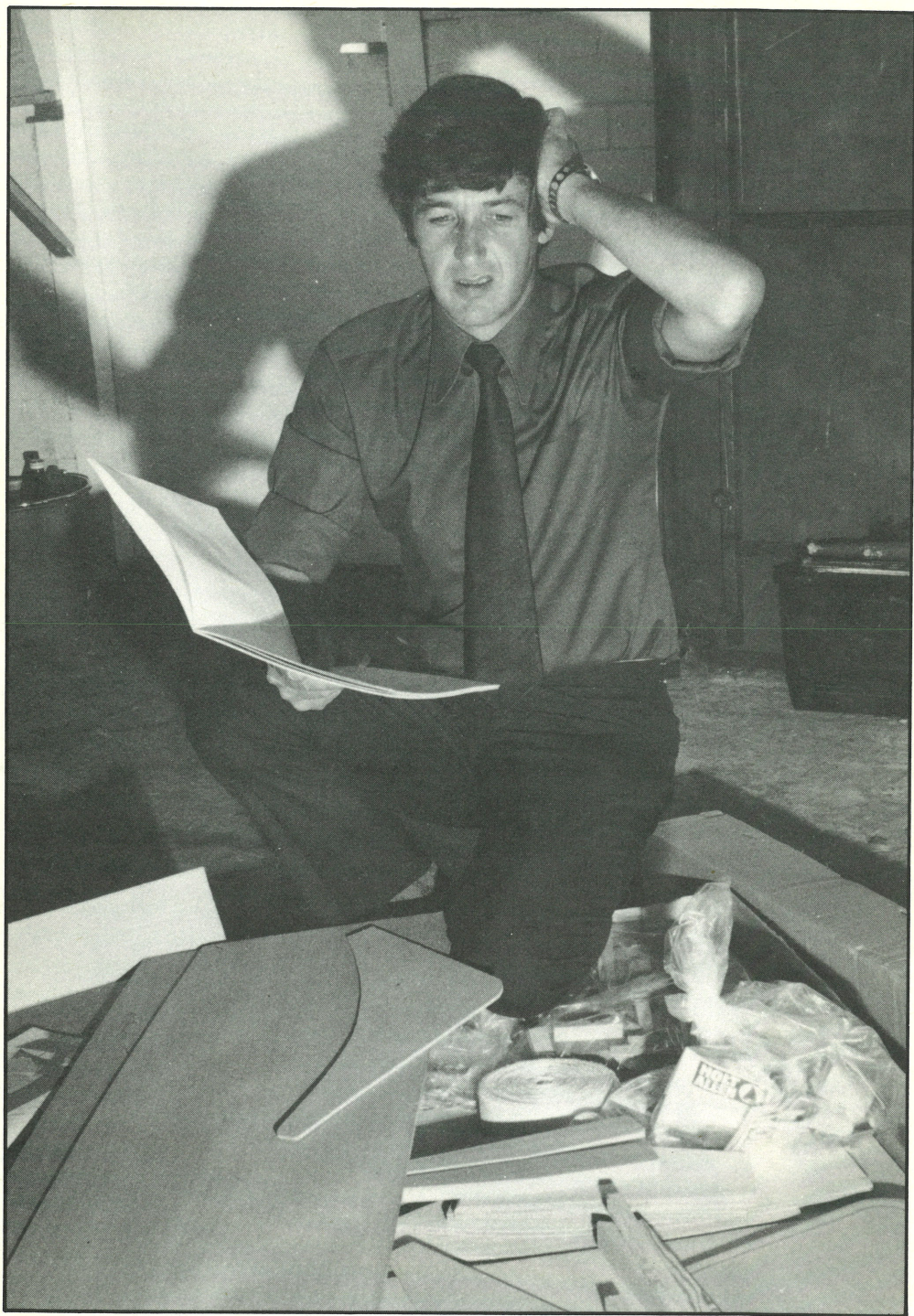
The next big milestone in the history of the Class came in 1971 when, having already had financial independence for some time, the Association became totally independent of the Daily Mirror and a separate professional Secretariat was set up with Sally Karslake as the Secretary. This resulted in a great improvement in the administration and organisation of Class affairs, not only because of the tremendous fervour brought to the job by Sally, but also because the job could be dealt with as a complete entity rather than as part of a number of other operations in the Mirror organisation. In fact, looking back with a detached mind, I think the only major loss to the Association was the easy-going flamboyance which graced the major Championships and events. For instance, the Fancy Dress dances at the Nationals and Europeans are now just a happy memory whilst the regular 'Fun' days at various seaside resorts, where Mirror Dinghies were seen haring around the waters collecting coloured balloons and empty gin bottles, linger on only in the reminiscences of the Mirror pioneers.

Nevertheless, the Class Association is stronger now than it has ever been and the Mirror Class itself is a major force in the world of sailing and, as I see it, it can only go from strength to strength for many years to come. To me, the most important consequence of the Mirror Dinghy is the sentence I hear very many times at every Boat Show from the hosts of owners who come and talk to us on the Stand - "We just want to say what a tremendous amount of pleasure we have got from owning a Mirror" . . . this seems to be a major justification for any boat!











# BUILDING AND CONSTRUCTION

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## Hints for builders

by Peter Taylor and David Oakes

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### Planning and Preparation

Building a Mirror Dinghy can be great fun. It will be even more rewarding if you spend a little time in planning how you are going to do it.

If you want to make a boat that will hold its value and can be raced, make sure that your dinghy will conform to the Rules of Measurement and Construction in the Yearbook by referring to these constantly throughout construction.

Prepare your working space and tools. Check your kit as soon as it arrives and make sure that all the parts are there.

Working out your own personal time table is important. This will give you a target to aim for, and help you to complete the dinghy in a realistic period of time. You should be able to complete the dinghy in about 100/150 hours. Dependent upon how fast you work, you may of course finish it much more quickly. Allow say, 110 hours for building, 30 hours for preparation, painting and varnishing, and about 10 hours for fitting out the dinghy. Thus, if you can spend about 15 hours per week, you should be afloat within three months of receiving your kit.

Reading ahead in the Building Instruction Manual and planning the sequence of operations can also help you to save time, e.g., you should prepare the centreboard case as soon as possible and put several coats of paint on the inside, so that the case can be assembled ready for fitting as soon as the hull has been stitched together, and will not hold up the building operation. Similarly, you will find that time can be saved by

preparing and varnishing spars, centreboard and rudder early in the building process. You can then apply several coats of varnish and have all these items ready well before the dinghy is completed. Preparing the bulkhead and decks in good time will help to keep the work flowing smoothly.

A ten-week programme could work out roughly as follows:

- WEEK 1.** Assemble and lace up hull, including fore and aft transoms and side pieces.
- WEEK 2.** Assemble and fit centreboard case.  
Fix aft transom top.  
Assemble bulkheads, fix stringers.  
Fibre-glass seams.  
Start preparing centreboard, rudder and tiller extension.
- WEEK 3.** Fix bulkheads, mast-step web and side tanks.  
Start preparing spars, decks.
- WEEK 4.** Fibre-glass well and inside buoyancy tanks.  
Check lining-up of hull and centreboard case.  
Fix thwart, shroud blocks, deck strengtheners and seat battens.  
Bend gunwales.  
Prepare stern post, stem block, skeg, bilge pieces.  
Paint inside buoyancy tanks and under decks.
- WEEK 5.** Fix tank drainage bungholes, stern post, stem block, foredeck beams, aft deck beam and supports.  
Assemble foredeck, fix decks.  
Prepare rudder and stock, gaff jaws, footrest, floorboards.
- WEEK 6.** Fix fore-transom top, gunwales, bow shapes, quarter knees.  
Make drainage holes in transom.  
Fibre-glass decks.



- WEEK 7. Fibre-glass inside stowage compartments.  
 Fix bilge pieces, floor battens, footrest, maststep.  
 Clean up hull, cutting off lacings.  
 Prepare keelband strip.  
 Fibre-glass exterior of hull.  
 Fix parts of gaff, mast and boom.
- WEEK 8. Fix skeg, keelband strip.  
 Complete fibre-glassing of hull.
- WEEK 9. Fill, stop and prepare hull for painting and varnishing.  
 Start varnishing topsides.
- WEEK 10. Complete painting and varnishing.  
 Complete fitting out.

### **Alignment of the Hull**

To assist in lining up the hull at various stages in the construction, attach black threads from the corners of the aft and fore transoms, diagonally across the boat and also from the centres of the aft and fore transoms. The three threads should intersect at one point if the hull is correctly lined up with the cross struts. The threads should also be used to ensure that the centreboard case is accurately fitted, both fore/aft and vertically.

### **Assembling the Hull**

When drilling the holes in the side panels, make sure that they align with the holes in the curved edge of the bottom panels.

### **Installing the Centreboard Case**

Do this carefully, bevelling the case accurately and making a good glue and screw fit. This will require help. Make sure that you line up the case fore and aft and also vertically with your centreline thread before fixing.

### **Fixing of the Transom**

The two drainage holes in the aft transom top may be enlarged to any shape within 1 1/2 in. diameter, but this should not be done until the aft deck is fitted, to ensure that you do not cut the holes below the deck line and thus into the buoyancy compartment.

### **Fixing of Stringers**

Great care should be taken in plotting the correct position of the stringers to ensure that they will coincide with the top edges of the bulkheads when these are fitted, otherwise you may have difficulty in fitting the decks

and in getting the buoyancy tanks watertight later on. Also take care when bending the stringers to fit the shape of the boat, and make sure that they do not split where cut to fit the butt straps. The stringers should be firmly glued and pinned.

### **Fitting of Bulkheads and Side Tanks**

The four glued blocks to which each of the bulkheads is to be fixed, must be carefully positioned, and glued and fixed firmly to the hull. Similarly, the four glued blocks to which each side tank is to be fitted must be glued and fixed firmly to the hull and in the correct position, as at a later stage the bilge pieces will be fixed by screws from outside the hull into the side tank glue blocks. Before glueing all the blocks, guide holes can be drilled through the hull to assist you in positioning the copper nails. Fixing them firmly helps to ensure that the buoyancy tanks will be watertight when finished. Fixing these blocks is a two-man job.

### **Sealing the Seams**

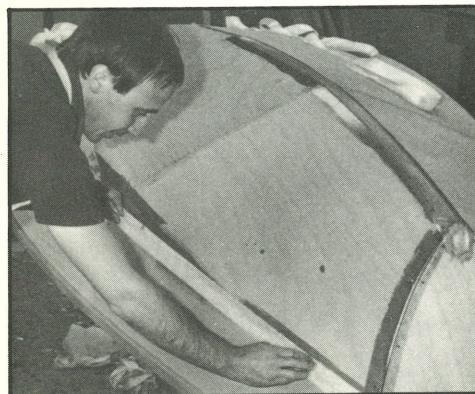
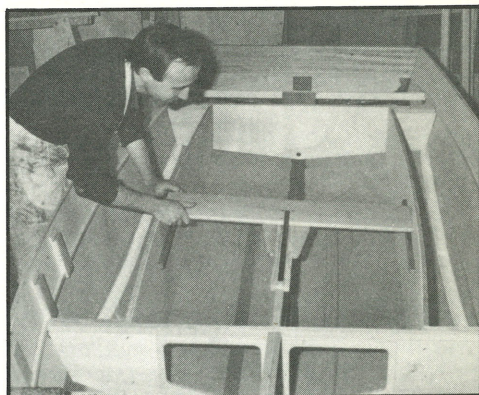
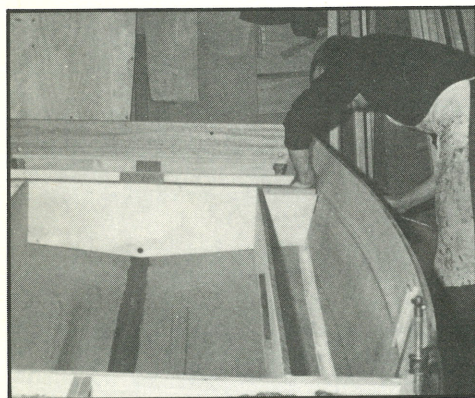
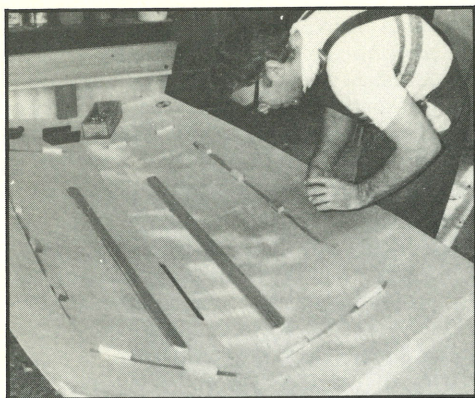
Make sure that all the wire stitches are as flat as possible, so that no air gaps can be formed when the glass-fibre seams are laid. This is important for strength and long life of the joints. Until you are accustomed to the rate at which the resin hardens, use small quantities, say 1/4-pint resin with 1/2-teaspoonful of catalyst. This should limit the amount of waste until you are fully experienced at handling the resin.

### **Buoyancy Tanks**

Great care must be taken to ensure that the buoyancy tanks are watertight when completed. To qualify for a Certificate, your dinghy must conform to the current Rules of Measurement.

Before fitting the decks, make sure that the inside seams of the buoyancy tanks have been properly sealed with resin, and that the insides of the tanks, including the undersides of the decks, are well painted. Do not paint those parts of the decks which will be glued down to the buoyancy tanks. Remember that this is your last chance to examine the insides of the tanks and ensure that you have done everything to make them watertight, before the tanks are closed. Seal the decks carefully with glue before they are pinned down and fill in any gaps between the decks





and the sides with resin, particularly around the shroud blocks and the butt straps. Make sure the drainage bung-hole fittings are carefully glued and screwed for a water-tight fit.

Seal all the seams in the stowage compartment and take particular care with

those between each bulkhead and the undersides of the decks. To do this you will probably need to turn the boat upside down and place it on supports so that you can work easily from underneath, using a torch and a mirror. Tilt the boat so that the resin runs into each seam in turn and is allowed



to set.

When the dinghy is painted and varnished you should test the tanks for air-tightness by blowing air into the tanks through the drainage holes. You can blow air through a plastic tube or use a car or bicycle pump. Small leaks can be traced by brushing soapy water around the seams and watching for bubbles. Large leaks will probably be heard. If the tanks do not maintain air pressure, you should apply more resin onto the seams until you are satisfied.

### **Fitting the Thwart**

When fitting the thwart, check that the centreboard case is running fore and aft and is vertical, sighting along your fore and aft centreline lining-up thread.

### **Fixing of Shroud Blocks**

If you do not wish to use the boat with mainsail only and with the mast in the forward mast step position, then you may omit the forward shroud blocks and fore-mast step.

Great care should be taken in positioning the shroud blocks. Look at Plate 40 and Plate 50 of the Building Instructions. The measurements specify that the distance at which the centre of the aft shroud plate is aft of the foredeck should be a minimum of 11 1/2in. (292mm) and a maximum of 1ft. 1/2in. (318mm). Thus the centre of the aft shroud block should be 12in. (305mm) from the foredeck.

### **Fitting the Gunwales**

The gunwales should already have been bent to shape and should therefore be easy to work. Use several 'G' clamps when fitting the gunwales. Look at Plate 62 before fitting the inner gunwales, showing how the butt straps should be cut down so that the gunwales fit flush to the sides.

The wooden fairleads and rowlock blocks may be omitted if you do not wish to use them.

### **Fixing of the Skeg**

When preparing the skeg take particular note of the measurements. The skeg should not be faired below the width of the keel band. Fit the skeg when the hull resin is wet and make sure that it lines up fore and aft to achieve minimum water resistance.

### **Fitting the Bilge Pieces**

Watch the measurements when fitting the

bilge pieces to the hull, and line them up carefully fore and aft to ensure that they are parallel to the centre line of the hull. The bilge pieces should be screwed through the hull into the wood blocks previously fixed inside the buoyancy tanks. You can locate their position by means of the copper nail heads which you will see on the outside of the hull.

### **Assembling the Centreboard and Rudder**

Refer to the rules and measurements when preparing the centreboard and rudder. These can be started quite early in the programme, as they will require several coats of varnish before being ready for use.

When fitting the rudder gudgeon to the rudder cheeks you may not need to carve the suggested channel.

### **Tiller Assembly**

You are strongly advised to fit a universal tiller joint to connect the tiller extension to the tiller, rather than using the brass nut and bolt provided.

You should also fix the tiller to the rudder stock rather than using the detachable split end provided. Glue or fibre-glass the tiller to the rudderstock to make a firm joint. Drill and countersink a hole at the aft end of the tiller to take a screw, say, 2in. by 10. You can determine the angle of the tiller by cutting the shoulders of the stock, so that the tiller extension comfortably clears the gunwales. Round off the rear corners of the tiller flush to the stock, so that the main sheet is not caught by the tiller. Cut off the protruding top of the rudder stock and smooth down ready for varnishing.

### **Fitting up the Boom**

The deadeye should be screwed to the underside of the boom at a position which will be vertically over the aft transom. This is to prevent tension on the main sheet forcing the boom forward and bending the mast.

You can best decide the position of the metal tack-eye on the upper forward end of the boom when you first hoist and set the mainsail.

If you propose to fit a clew-outhaul on the boom, then the 5/16in. (8mm) hole on the aft end of the boom is not necessary.

### **Fitting up the Mast**

When fixing the goose neck fitting, make



sure that the distance from the lower edge of the fitting to the base of the mast falls between 2ft. 0 3/4in. (629mm) and 2ft. 1 1/2in. (641mm) as specified in the measurements. When fitting the halyard sheave, ensure that the distance from the topmost part of the halyard sheave to the base of the mast is within 10ft. 6in. (3.2m) as specified in the measurements. Drill holes for the axle squarely and accurately, so that the sheave will run freely. You may need to use a punch to make the axle fit tightly.

### **Fitting of Brass Keel Strip**

Fix the strip when the glass-fibre is wet along the centre seam. This will ensure that any screw holes in the seam are fully sealed, and will also help to bed down the strip.

### **Varnishing and Painting**

Throughout the construction, it is important that you keep the boat clean and free from dust, paint or excess resin, particularly on parts you wish to varnish, as these blemishes will show through and may spoil the finish.

By the application of a filler, such as Isopon P38, you can blend the fibre-glass seams into the hull.

### **Fixtures, Fittings and Accessories**

Permitted optional fixtures, fittings and accessories are stated in the Rules. Start off with the minimum of extras, and examine other boats carefully before you decide which to buy and where to fix them.

Jamb cleats for jib sheets with built-in fairleads, instead of those supplied, should be fitted when the boat is complete. They may be fitted to the gunwales, or on the tanks or on the thwart, but you should check the Rules of Measurement governing their positioning and mounting before proceeding. They should not protrude beyond the outer surface of the hull, nor should they be adjustable whilst racing. The position of the jamb cleats should be determined when the boat is rigged and the jib set in order to get the right tension on the leech and the foot of the jib.

Main sheet blocks and toe straps are also advisable. You should acquire a paddle, hand-bailer and burgee (triangular for pottering and rectangular for racing)

A clew outhaul and tack downhaul can

both be fitted cheaply and are a great help in sail-setting.

The kicking strap supplied is quite adequate, though later on you may want to fit a more refined type with a jamming device.

If you are likely to sail at sea, or to race, then a reliable self-bailer should be fitted. The recommended place for this is alongside the rear end of the centreplate case and close to it. This is the lowest part of the boat in the water, and out of the way of crew's feet.

An anchor with a suitably long warp is essential for sea sailing.

You are also permitted to fit additional floor battens, and these are well worthwhile for the additional stiffness and support to the floor. They should be fitted when you put in the original battens.

Before buying any of these extras, examine other boats, talk to other sailors, and seek advice on the best fittings for your purpose, and where they should be positioned.

### **Advice on Building**

If you get into any difficulty in building your dinghy, do not hesitate to get in touch with your Area Representative, or your nearest Measurer, Fleet Captain or the Class Secretary, as listed in the current Yearbook.

You may find the Guide to Measurers issued by the Class Association of assistance in checking any of the measurements during the construction of the dinghy. This is obtainable from the Class Secretary, Sally Karslake.

Finally, to summarise, plan the project before you start, and read the Building Instructions and Rules of Measurement thoroughly, referring to them constantly as you go along.

You may find it helpful to make a note of some of the previous points on your copy of the Building Instructions.

As soon as you have finished your Mirror Dinghy, arrange for it to be measured by an Official Class Measurer, who will also check your buoyancy.

When you are ready to launch, join the Mirror Class Association and a Sailing Club. Also take some advice from an experienced sailor before your first trip.

Everything should then be plain sailing!



# Buoyancy hints for builders

by the Association Committee

1. When building your Mirror Dinghy, it is essential that particular care be taken in sealing all the seams of the buoyancy tanks.

2. The Rules of Measurement and Construction of the Mirror Class Association include a Rule on Buoyancy which states as follows:

*Buoyancy shall be inspected annually and immersion tested at intervals not exceeding three years by an Official Measurer who shall endorse the Measurement Certificate if he is satisfied that the buoyancy is adequate, indicating on the Certificate whether inspection or test.*

*Screw type ventilation hatches, maximum diameter 0.152m (6in) are permitted in all buoyancy tanks. These shall only be fitted to the vertical panels of such tanks, one only in each tank. On no account must the tanks be used for stowage purposes.*

*In Mark I boats only, ventilation hatches are permitted in the forward bulkhead to create limited stowage space within the aft section of the forward tank.*

*An immersion test shall be carried out in parts. Parts (a) and (b) must be carried out, but Part (c) is only required when a Measurer deems it necessary.*

*(a) The boat shall be laid on its starboard beam on land with the mast held level. The starboard stowage compartment shall be flooded for ten minutes. The maximum total seepage shall be one gallon.*

*(b) The procedure given in (a) above shall be repeated with the boat on its port beam and the port stowage compartment flooded. The maximum total seepage shall be one gallon.*

*(c) The boat shall be put afloat with a crew of a minimum weight of sixteen stones aboard. The cockpit of the boat shall be filled with water and the level maintained at the top of the plate case for twenty minutes. The maximum seepage allowance in any tank after this test shall be one gallon.*

3. Before fitting the decks, make sure that the inside seams of the buoyancy tanks have been properly sealed with resin. When applied, the resin tends to run down the tape. Therefore, you should check carefully that there are no gaps at the tops of the seams. They may need a second application of resin to ensure a satisfactory seal. Any leaks between the side tanks and the rear tank are virtually impossible to cure after the decks have been fitted. Thus great care must be taken during construction.

The decks should be carefully sealed with glue before being pinned down, to ensure that they will be water-tight. Any gaps between the decks and the sides should be filled in with resin. Particular attention should be paid to those parts of the decks which fit around the shroud blocks and butt straps.

The drainage bung-hole fittings should be carefully glued and screwed into position to ensure a watertight fit.

4. The stowage compartment seams should receive special attention during construction.

You are recommended to fibre-glass tape and resin the seams between the undersides of the decks and the forward bulkhead and stowage bulkhead to ensure a watertight seal inside the stowage compartment.

To carry out this operation, the boat should be turned upside down and placed on supports so that you can work easily from underneath. You will need a mirror and a torch or light. The boat should be tilted so that the resin runs into each seam in turn and is allowed to set.

5. The fitting of inspection hatches is not recommended, because of the problem of making them watertight. If you do decide to fit them, you should bed them into an adhesive such as Bostic. The lids should be either liberally greased or sealed with a sealant such as Bostic.

6. When you have painted and varnished your dinghy, you are recommended to test the tanks for airtightness by blowing air into the tanks through the drainage holes, using a plastic tube fitted into a cork.

Large leaks of escaping air can be heard. Small leaks can be traced by brushing soapy water around the seams and watching for bubbles. The stowage compartment seams should be very carefully examined for leaks.



# When you capsize—do you get that sinking feeling?

by John Weedon

The Mirror Dinghy has, as I am sure you all know, four buoyancy compartments — one large bow tank, an aft tank and two side tanks. To ensure a long and as trouble free as possible life for you and your boat, it is necessary for these compartments to be water tight.

1. Are there any leaks? To check for these it is possible to do a full immersion test as described in the Mirror Yearbook but a quicker and more convenient method is to blow air into the tanks and observe whether it escapes or not. For this you will require approximately four feet of half inch bore garden hose tapered at one end to make a tight fit into the buoyancy compartment drain holes. Connect the tube to each tank in turn and blow gently — if the tank is air tight (and consequently water tight) resistance to blowing will be felt and the deck or side of the relevant tank will immediately move outwards slightly. When only a small amount of resistance is felt and the deck or side of the tank movement is barely perceptible you will have a minor leak. However, if no resistance is felt to a mighty lungful of air blown into the tank then an urgent repair is called for.

2. If there is a leak, where is it? small leaks can be located by listening for the noise of the air whistling through the gap during the 'blowing' check; larger holes require the use of a wet finger or back of the hand to feel the escaping air. The most likely places to find leaks are; (i) inside the stowage compartment between the bulkhead and the hull side panel, particularly just beneath the deck; (ii) around the butt strap, joining the hull side panels, and the fore deck; (iii) around the shroud blocks where they meet the deck; (iv) at the aft outer corners of the aft deck; (v) between the lower edge of the side tank and the bottom of the hull where the tape has pulled away due to heavy feet;

(vi) between the side and aft tanks, inside. This probably does not matter and anyway is impossible to repair without a great deal of trouble. To eliminate leaks between the tanks showing up in the tests, fit the bungs in all the buoyancy compartments except the one being checked.

3. How to repair the leaks. (i) To reach inside the stowage compartments turn the hull upside down and support it on three chairs or stools, then sit underneath the hull with a lamp and hand mirror. 'Sealastic' or a similar flexible compound can then be used to fill the gaps. (ii) For the more accessible places around the deck and tank sides, turn the hull the normal way up. Small pinholes can be filled by brushing in varnish. Larger holes around the taped joints should have the varnish cleaned off and more resin applied. (iii) Where the tape has pulled away, replace it after carefully cleaning the area down to the wood. (iv) Finally varnish or paint over the repairs.

4. Keeping a check on the buoyancy. When you are satisfied that the tanks are air tight it is quite simple to confirm this on a warm afternoon after the day's sailing. Assuming that your boat cover is fairly weather proof, so that rainwater cannot collect in the bottom, it is recommended that you store your boat with the bungs removed. When the bungs are fitted in the morning before sailing, the air inside the tanks will be cool but as the day warms up this air will gradually try to expand. On removing the bungs you should hear the hiss of air escaping if the tanks do not leak — what a relief!





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# Polyester adhesives

by L Bennison

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It is difficult to imagine that polyester adhesives could be affected by any sort of material either paint solvents or by environmental contaminants. The situation does however exist and perhaps the following may enlighten people as to what can occur.

The word polyester is a rather vague name for a very wide range of substances, but we are concerned purely with the unsaturated polyesters made chemically by reacting dihydric alcohols with unsaturated difunctional acids, usually by condensing them. This type of product can then be further reacted and made to form hard, clear, infusible masses with a reaction carried out by addition of hardeners, usually of the peroxide type. This could be a liquid or more commonly now a paste.

Upon mixing the hardener a reaction occurs, polymerisation is further initiated and the resin hardens with rapid heating (called an exothermic reaction). The heating process then causes crosslinking to occur. Crosslinking is essentially the combining of chains with little active tails which produces a huge lattice work of resin, the more links in the lattice the harder the cured resin will become. This is the basic principle for making polyester laminates or adhesives.

Certain additives are used usually by way of solvents such that the resin can be easily worked. Styrene is the most common chemical used for it is possible for this too to react and form the well known polystyrene in-situ with the rest of the resin's mass. Thus is it possible to obtain very thick films of lamination as the solvent is not lost.

A further point to note concerning undercure is quite applicable to Mirror Dinghy owners. Should a situation be reached whereby all the styrene cannot be reacted, due to using too little hardener, what we class as free styrene exists. Styrene (monomer) is a very aggressive paint thinner and it can often be seen on Mirror Dinghies that paint detaches around the taped area. Upon removing the

detaching paint a very pungent odour will be noticed if undercure is the cause.

Despite the thickness and apparent hardness certain aspects must be carefully watched. Even mixing of the hardener is most important, for although the resin may appear hard all over, brittle spots and soft spots will exist and it is obvious it will then be prone to breakdown. Too little peroxide will obviously not allow it to cure and it is also wrong to adopt the attitude "one for the pot" as this will lead to a very brittle resin which will easily crack on impact.

It is often assumed that because something is physically hard it will not be affected by chemicals. Nothing is further from the truth. Certain solvents and industrial cleaners have a decided detrimental effect and should not be used. Paint strippers being the most common and most of these contain methylene chloride, a very aggressive solvent for polyester. Other quite common materials have some effect, notably acetone, carbon tetrachloride and trichloroethylene. Fortunately most people try to use this as a degreasing fluid so the effect is often not too great, however as a degreasing fluid they evaporate too quickly and most of the contamination is re-deposited.

Other surface defects of polyester can be quite easily eliminated by control of the application conditions. Usually this is crawling and/or cissing often stimulated by attempting application after the gellation process has progressed too far. The surface then appears rather like orange peel or with a series of very fine pinholes. Admittedly these defects can be attributed to formulation but more often it is a fault of the operator.

A lot has been talked recently about polyester taking up water. This has been mainly applicable to large racing craft and often overlooked in the more mundane job of taping the seams of a Mirror dinghy. But it is equally as important. Polyesters certainly do take up water usually between 0.75 — 1.25% per annum. As polyesters do not really wet out the glass tape, but instead envelope it, a danger exists in the water creeping by capillary action and weakening the bond. Expansion and contraction of water could lead, only in extreme cases, to total delamination. This defect can also exist if the glass fibre tape is not properly



wetted with resin and pockets of air exist with the tape. The expansion of the air pocket can also lead to fracture.

So, to summarise the use of polyester/glass fibre tape seaming:

1. The resin is already a polymer which the operator further polymerises, following the mixing proportions accurately.
2. Do not continue to use after the gellation point has been reached; poor wetting occurs.
3. Avoid indiscriminate use of solvents.
4. Ensure the tape is fully wetted with resin thus avoiding air pockets.

As a matter of personal hygiene operators should avoid resins and particularly hardeners coming in contact with the skin.

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## **Timber, its properties, preparation and preservation**

**by International Yacht Paints**

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Although steel, light alloy, ferro-cement and plastics have been successfully used to build yachts, timber is still a very popular basic material. A good knowledge of timber is essential for its optimum utilisation and when it comes to painting and varnishing the yachtsman must be familiar with such properties as shrinkage, water content and common timber defects.

### **Soft Woods**

The general category, soft wood, refers basically to timber from conifers. There are notable exceptions to this general classification, as yew is classified as a soft wood although it is physically harder than a large number of hard woods. The soft wood areas of the world are many and varied, though the majority of soft woods used in boat building in Europe are of North American or Baltic origin. Soft woods predominate in cool climates. The northern limits are independent of the severity of winter but the average July temperature must not exceed 14°C. Where similar conditions prevail in

mountainous regions, it is possible to find soft woods growing in the tropics but as conditions become more favourable, hard woods predominate, particularly in areas of the tropics where the rainfall is significantly high. Coniferous forests are tolerant of low rainfall but have water replenishments due to the heavy snow falls they experience.

When buying soft wood or any timber it is important to examine it carefully. Soft woods can be bought either sawn or planed. Sawn timber is extremely rough and because of shrinkage, can vary from its original size, i.e. be considerably smaller than the size at which it was sold.

Planed timber is of course smooth and needs little extra dressing with a sharp plane before fabricating into a yacht.

Soft woods, with the exception of Red Cedar, deteriorate extremely quickly when left out-of-doors and it is essential that they are protected with either Intertox Wood Preservative or completely painted.

Most soft woods have a high natural resin content. This can be seen in hard sticky pockets which will eventually exude as a sticky syrupy liquid. It is essential to seal all knots and any tiny pockets with Knotting Solution before priming and painting. If these resinous areas were intended for total immersion (not a practice to be recommended) it would be necessary to cut away all areas showing a tendency to exude resin before painting commenced.

### **Hard Woods**

The majority of yacht building is carried out using hard woods. They are much more expensive than soft woods but are much more durable and resistant to wet rot. The amateur boat builder is often afraid to use hard woods but the general rule is that as long as tools are kept sharp, hard woods can be handled much easier than soft woods. An accurately cut joint in hard wood is superior to that cut in soft wood, as the hard wood does not have such a noticeable tendency to shrink. Within the hard wood category, some significant differences in the hardness of timbers do exist. For example, the traditional English Oak framed hull is considerably stronger than a hull frame fabricated from Japanese Oak. Hard woods can be sub-divided into two main classes, temperate hard woods and



tropical hard woods. Temperate hard woods are predominant in areas where the average temperature ranges between 5 – 18°C. Frosts and low levels of snow can be tolerated by these trees during winter but they are unable to tolerate an annual rainfall exceeding 60 cms. Some of the temperate hard woods, notably birch, may be found in the northern forests growing alongside soft woods though these species are not considered suitable for boat building. Tropical hard woods are those timbers which grow in a totally frost-free atmosphere and require a minimum of 60cms. rainfall annually for full development. Generally, they require a rainfall of at least 2 metres to produce the sort of timber which we consider satisfactory for boat building. Most of the tropical hard woods would have stunted growth if the temperature ever dropped below 14°C.

When selecting hard woods the rule is to avoid all sap wood and the hard centre of the log. The sap wood is much softer than the rest of the log and the heart usually shrinks, splits or twists.

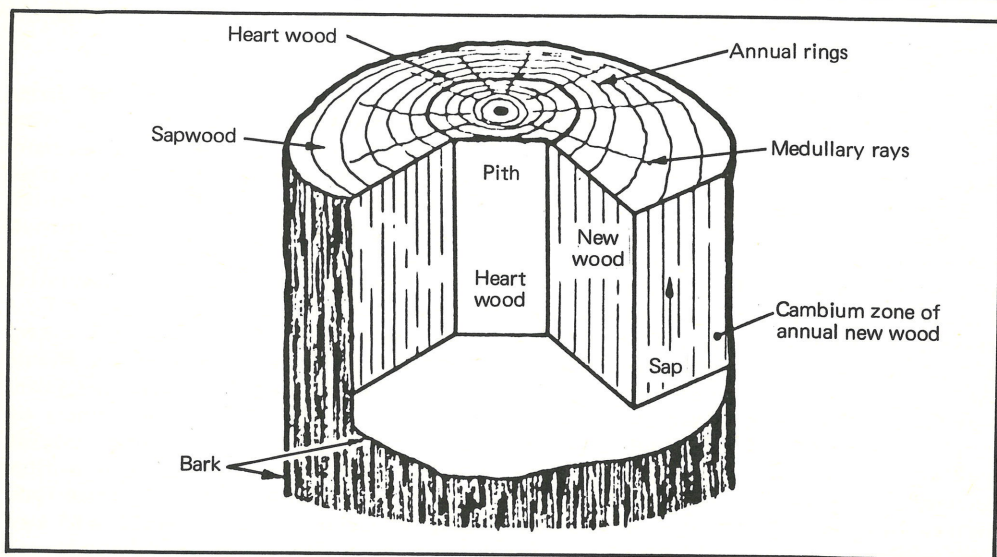
Select timber which has been properly stacked and matured. The usual method in the U.K. is to stack the boards as they come from the log. The general rule is that if the stack is untidy, the timber is becoming prone to warp or some quick discerning yachtsman has already selected the good planks.

When selecting hard wood buy the dirtiest

plank rather than the cleanest, for the dirtiest is usually the most seasoned. One should also be aware of water marks in the timber, for if rain has been driving into maturing sheds it may not be possible to remove these marks without planing away large areas of the plank, which may not be desirable if these areas are to be part of a varnished topsides. Remember also that the ends of the planks dry out considerably quicker than the centres and that the ends of the planks may well have to be discarded due to cracking. Some timber importers coat the ends of the planks with paint or pitch. Pitch is a product which is prone to bleed into subsequent coats of paint and it is advisable to avoid buying pitch ended planks.

### Moisture Content

An indication of the moisture content should always be obtained before either building or painting. If damp timber is used, one risks shrinkage, warping, glue failure, and once painted, the chances are the paint or varnish will strip off, particularly if they are the reactive polyurethane types of paint. The timber is often bought at a moisture content of between 15 and 17%. Once it has been fabricated into a boat shape the moisture content generally drops to between 10 and 13%. Those builders who build relatively small craft, notably racing dinghies, in centrally heated workshops, may well find that the moisture content of the timber in





the finished job is as low as 6 — 8%. To avoid these rapid contractions in timber it is best to store the timber for three or four months in the area where construction and subsequent painting will take place. To check the moisture content it is necessary to weigh a piece of timber, often chippings from a joint will do, heat to dryness and weigh again.

$$\frac{\text{Weight of timber lost} \times 100}{\text{Dry weight of timber}} = \% \text{ moisture content}$$

### **Plywood**

Plywood is made from an odd number of veneers, glued face to face with the grain running in alternate directions. The minimum number of veneers considered for yacht use is three which are the minimum requirements to prevent plywood from warping. The greater the number of veneers used, the greater the increase in strength. However, plywood can still twist because no two veneers are completely identical and the tensions within the veneers never achieve equilibrium. A contributory factor that can cause warping is excessive heat on one side of the ply which will cause the veneer to contract thus pulling it out of shape. Plywood in the boat building industry is covered by British Specification BS.1088 and should be marked with the initials W.B.P. which is water-proof and boil-proof glue specification. The veneers themselves are also graded. A plywood marked W.B.P. (A) denotes that the veneer is without blemish, whereas plywood marked W.B.P. (B) shows that the veneer is reasonably sound but may contain small knots or occasional markings. A veneer stamped AA means that the veneer on both sides of the laminate is perfectly sound. A further British Standard (BS.1203) issued in 1954 classifies the adhesives commonly used in plywood. The stamp W.B.P. is a guarantee that the plywood will not delaminate in extreme Arctic or tropical climates. As with solid timbers, if plywood is too damp, paint and varnish do not key properly and are likely to flake off. Plywood is normally produced at a moisture content of about 8 — 12% and is usually supplied nearer the lower limits. It should be stored to maintain the minimum moisture level. Uncrated plywood must be properly stored if it is to remain flat. It should be piled flat, kept

2 — 3cms. off ground level with regularly spaced battens and the pile carefully secured. Boards should not be stored on edge.

### **Faults in Timber**

There are a number of defects which the boat builder should be aware of when selecting timber, the commonest being knots. Dead knots are particularly noticeable having a black surrounding rim and no trace of exuding resin. Such knots should be avoided when selecting a plank but if this is unavoidable the knot should be cut out. Live knots are those which will be seen to be resinous and may well be exuding resin. In this instance the resinous exudate should be removed and the area treated with Knotting Solution to prevent further resinous exudation. Timber showing these defects is not often used in yacht construction but during timber shortages in various qualities a yard will, after consultation with the prospective owner, select a plank containing a knot such that the knot does not have any detrimental effect on the structure of the hull. It is very rare in construction that timber will be used showing compression shakes. These are areas of timber which have been distorted due to felling or high power sawing. If these shakes should ever appear subsequent painting will be seen to crack violently allowing ingress of water and we would recommend that the effected area of timber be removed and the unsound section replaced by scarfing. End shakes are carefully avoided in yacht construction.

### **Wet Rot**

Wet rot is a term used to cover a group of fungi which attack timber with a moisture content usually in excess of 30%. Wet rot is much more common than dry rot. It is not so evident in yachts which are kept in saline conditions as sea water has a mild antiseptic quality. However when inadequately protected timber yachts are moored in fresh water, or in estuaries which exhibit distinct layering of water, the timber may be seen to rot. Wet rot is easily recognised as the timber becomes dark brown or black, is spongy and compressible when wet, but is easily friable when dry. In the early stages it may be possible to retard the rotting by impregnation with a wood preservative but more often it is necessary to cut out and replace the affected areas.



## Painting and Varnishing of Timber

The foregoing has outlined the good and bad points concerning the timbers used in the boat building industry but has said little about the painting and varnishing of timber except with relation to the defects occasionally found in timbers used in yacht construction. Varnish, as with other paints, must penetrate the timber in the initial stages of painting for the scheme to be fully effective. Some timbers are more easy to penetrate than others. Timbers of an oily nature, e.g. teak, are very difficult to penetrate and are quite often oiled in preference to painting but astreak has a particularly anti-rot property, it is resilient for long periods without undue discolouration. Timbers prone to wet rot should be protected with a clear wood preservative preferably of the phenolic type (Intertox) before the normal painting scheme is applied. First coats of varnish or wood primer should be applied, thinned with the appropriate solvent and worked into the timber with a short bristled brush. Two-component products have special penetrating primers available. One point to remember is that stains do not normally contain preservative and this should be applied after a clear wood preservative has been seen to

dry. We do not advise mixing wood preservative with solvent stains for as the solvent stains are hand applied even the use of rubber gloves may not prevent skin irritation. With two pack Polyurethane Varnish, stain first then use Universal Clear Primer.

After a thinned coat of varnish or wood primer has been applied, the grain of the timber will be seen to rise. The temptation of most yachtsmen is to rub down immediately to obtain a smooth finish. This however removes the wood fibre which will aid mechanical adhesion for subsequent coats of paint and varnish. Also, if the wood has been stained, rubbing down too early may well remove the surface of the sanded timber with the ultimate effect of giving a patchy finish. Full-bodied coats of paint and varnish should always be applied to the raised timber grain before the surface is rubbed down and adequate coats of paint or varnish should be applied to ensure that the raised fibre is well covered to prevent 'wicking' which could lead to subsequent paint peeling. 'Wicking' is simply a term for the provision of capillaries along which water can travel. Painting and varnishing by conventional methods is discussed in detail in a separate article to which we advise you make reference.

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## Compression or tension cracking

by International Yacht Paints

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These faults are often reported as a failure in the paint film, but experience has shown that they generally have little or nothing to do with the performance of the paint. They are generally due to two factors (a) insufficient structural support to large areas of plywood and (b) The use of poor quality plywood. To be fair to the designers and builders, the demands made on them to produce a high performance sailing dinghy necessitate building to a minimum weight. In order to gain the performance required, not only is the thickness of the plywood reduced, but also the quality. Exterior grade waterproof plywood will bend a greater radius more easily than BS1088 Marine

Plywood and is also considerably lighter in weight. A classic example of this is the Mirror 14ft Dinghy which is built by the copper wire stitching and F/G tape principle. The frame work has been reduced to a minimum and a thin non-marine plywood has been used in order to obtain large smooth curves which is desirable not only to obtain the shape but also the lightness in weight. Consequently, this dinghy often shows signs of tension cracking.

When plywood is used in this way, the veneer on the outer face of the curve is stretched, causing cracking giving the impression that the grain of the wooden veneer is opening up. One would think this would happen when the plywood was first forced into this curve and sometimes it does, but usually it takes several weeks to settle down to its new shape, by which time the paint has been applied and the boat is in service. These cracks will first appear as hair line cracks only a few millimetres long running parallel



to the grain of the veneer. As time progresses these will lengthen and become slightly wider. If no action is taken at this time, water will enter into the plywood and detachment of small pieces of the paint film will soon take place. This type of cracking may only affect a small area of a few square inches, but in certain cases larger patches covering some 60% of the craft may appear.

Compression cracking looks much the same but will also occur in good quality marine plywood. Hence the fault is entirely due to the design of the craft. It usually shows in small patches where the plywood has been compressed. For example where pressure is caused on the sides of the plate case when the centre board rests in a fully extended position or where the crew sits on the side decks if insufficient deck beams have been fitted to support his weight. A further example of this problem frequently occurs on the bilge panels of hard chine dinghies. This being due to a figure eight twist placed on the panel during the course of sailing the craft hard. The Fireball dinghy being particularly prone to this problem. Needless to say, all these faults would be accelerated if the craft had been sailed in either heavy seas or with an excessive crew weight.

We have mentioned by name two dinghies in particular but both these faults are likely to be found in any craft built from plywood if the above mentioned circumstances prevail and in our experience, if this particular type of hair line cracking is seen it should be possible to find the cause if you enquire into the following. Type of material used and where and by whom it was sailed. This, coupled with a close look at the boat's structural design should provide the answer.

With regard to putting the matter right, as a temporary measure a coat of compatible varnish will probably keep the water out until the end of the season. At which time we suggest the cracking is filled with a thinned down two pack filler applied across the cracks with a piece of canvas. This should be done prior to any rubbing down as it has been found that if the areas are rubbed down first, these hair line cracks will be filled with the rubbing dust which will prove most unsatisfactory. The craft should then be repainted according to our standard recommendations.

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## Painting and varnishing by conventional methods

by International Yacht Paints

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Seventy five percent of the time taken for painting or varnishing should, if a 'professional' finish is the aim, be spent on preparation of the substrate and subsequent coatings to accept the paint. The other 25% is the actual painting time. If the substrate is not correctly prepared, it is impossible to expect anything more than a mediocre result. Paint can, and does, cover a multitude of sins, but you can be sure that ultimately, any poor preparation will show up as a defect in your paint film, marring the mirror surface which is the acme of professionalism.

Assuming that the substrate has been adequately prepared, dust settlement during drying is one of the major problems. This can be reduced considerably by painting under the best conditions possible and this involves making arrangements to eliminate loose dust on the job, bench or floor. (Water scattered on the floor can prevent lifting of dust from concrete floors). It is also advisable to avoid wearing a woollen garment when painting. Anyone wearing wool can convince themselves this is wrong simply by standing in a ray of sunshine, moving an arm, and observing the dust produced. This dust is of course made obvious by the myriads of dust motes which will reflect the sunshine and 'dance in the ray.' An examination of this dust by microscope will reveal that it is largely composed of short hairs broken from wool. Should this dust land on a wet paint film, the hairs will sink and finally act as wicks in the dried film. Tack rags should be employed for the purpose of removing the last particles of dust which have settled on the surface, for the following reason: Many painters prepare their work adequately, paint properly and leave the work to dry with what appears to be a perfect surface. Imagine their disappointment



when they discover the dry film covered with 'specks' and 'nibs,' marring the perfection they so earnestly desired. What is the cause? This is not so difficult to understand if it is realised that for the majority of decorative yacht paints only 50% of the volume of the product is solid material. This means that after a paint film has been applied, its wet film thickness is reduced by one half when the solvent evaporates, e.g. if a normal brushed coat of paint is applied its wet film thickness would be between 50 and 75 microns, giving a dry film thickness of 25 – 37 microns. It is obvious therefore if the paint contains, or has picked up dust particles or skin nibs which are 40 – 50 microns in size, they would effectively be covered by the wet film of 75 microns, but protrude from the dried film of 25 microns, hence the disappointing result. Therefore remove all dust particles with a tack rag before painting. It is unlikely that there will be dust or foreign matter in modern yacht paints or varnishes; however, partly used tins of paint or varnish can skin in the container and this skin will be broken into small pieces when the paint is stirred. These small pieces of skin can be removed by straining the paint through a double thickness of 'silk' stocking. If paint has previously been allowed to dry in the bristles of the brush in use, any such dried paint will be a source of nibs to end up in the paint film. The obvious procedure to adopt is to ensure thorough cleaning of all brushes before storing. Immediately painting is finished the brush should be washed out in the correct solvent for that paint and then washed in warm soapy water, dried, and then wrapped in cellophane to keep it dust free ready for the next job.

### Application

The purpose of the thinner/solvent in a paint or varnish is to facilitate the even spreading of a thin film on the chosen substrate. When this has been accomplished the solvent volatilises and plays little or no part in the subsequent life of the paint film. If one observes an expert painter at work it is evident that the above facts are very well known to him and he works with speed and energy to ensure the maximum solvent content in the paint when he has finished. This, together with his natural skill, aids the final flow of the paint, brush marks are

eliminated and the best possible results are achieved.

As speed of application is essential, it is necessary to know your own capabilities and use the largest brush consistent with the area to be painted.

On flat vertical surfaces lay off with vertical strokes as this will reduce any tendency to run and curtain. If the seams on a yacht's topsides are visible, lay off horizontally as this will tend to sweep out excess paint from the joints. Keep a careful watch for runs which can easily form on irregular surfaces. Once a run has dried it is very difficult to rub down properly to eliminate it. Being thick paint, it retains solvent much longer than the surrounding area and wet and dry paper either balls, clogs, or tears the film, causing in some cases, a bigger defect than the original runs. So if you develop runs, give them at least a month to dry out before tackling them and use wet and dry paper wet, using soap and water. On surfaces similar to coamings, lay off horizontally, being careful to remove surplus paint which may have drained to the section near the deck or quarter round.

When doing brush work, the maxim 'cheap brush, cheap job' is literally true and good quality bristle brushes should always be used. A good quality brush with long flexible bristles can be used for applying a paint which has good flow and covering capacity. A short stiff brush should be used for scrubbing primers into the pores of a substrate or for spreading thick viscous paints, so choose your brush with care.

Some paints tend to thicken when they are cold, so if a paint is to be applied in cold weather keep the paint overnight in a warm place and if necessary, kept warm by standing the tin in a bucket of hot water while the paint is being used. Do not let water get into the paint or onto the brush. This system works well if the substrate is wood, G.R.P. or concrete which are poor conductors of heat, but not so well when steel is to be painted because the metal conducts away the heat from the warmed up paint and spreading is carried out at the temperature of the metal. In this case the addition of 5 – 10% thinners may be warranted.

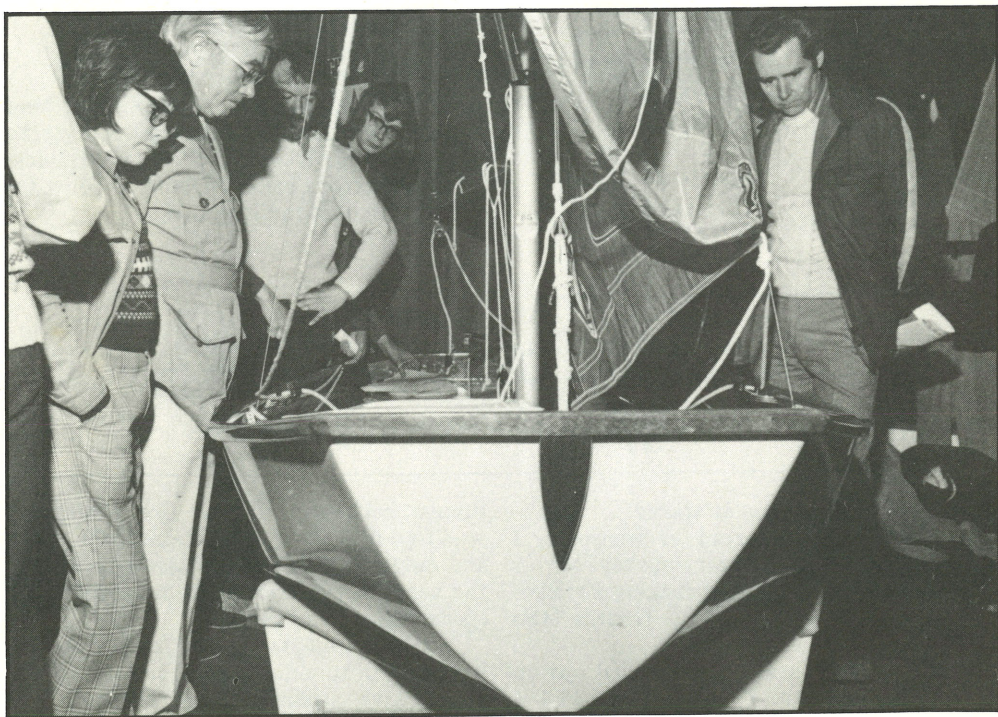
Having ensured that the substrate is clean, dry and dust-free, the brush should be dipped



into the paint can containing the well stirred paint so that one third to one half of the hair is immersed and withdrawn without touching the sides of the can. As it is removed from the can the brush should be upturned to an angle of 45 degrees to reduce the risk of dripping, and then transferred to the surface to be painted. If it is wished to wipe the brush to prevent overloading and dripping, the paint should be transferred to a kettle with a wire stretched across the top centre. If the brush is wiped against the wire the surplus returns quickly to the kettle and suffers little loss of thinners and the loaded brush can be carried to the surface to be painted with little likelihood of drips.

Some painters prefer to use a roller — it usually saves time in application but can necessitate more time in rubbing down, as the surface left by the roller is not quite so smooth as that left by a good brush in a skilled hand. It is also difficult to roll on the first coat of priming satisfactorily and there is less risk of trouble if the first coat is well brushed into the surface to thoroughly wet it and to incorporate any rubbing down debris which has been accidentally left behind.

Painting and varnishing is an art which must be learned by experience and different people develop their own techniques for painting. One that has been particularly successful in varnishing difficult woods such as teak, is to remove the teak oil on the surface of the wood by swabbing with a strong solvent, wipe dry with clean lint-free cloths and then rub down the wood with glass paper to remove all irregularities. Remove all dust and loose wood fibres and as quickly as possible apply a coat of varnish thinned out with 25% thinners. This will then seal the timber and when dry a number of broken fibre nibs will be sticking through the film. Normally it is the practice to remove these by rubbing down with glass paper before putting on the next coat of varnish, but it has been found that these nibs can provide a good physical key and should be left until the penultimate coat is to be applied and then rubbed down to prevent a 'wick' action taking place. Using this technique, teak has been successfully coated and exposed for periods of over five years without detachment with a coating scheme of five coats of varnish or five coats of paint.





# Some helpful gadgets

by P.A. Watson

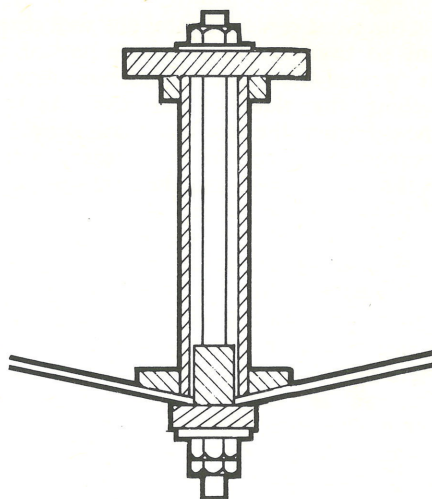
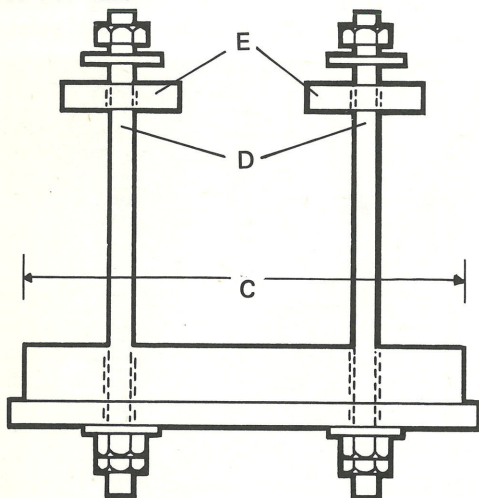
It's now a couple of years since I built my Mirror and, being an independent sort of cuss, managed it single-handed.

I'm taking the liberty of suggesting some rough notes and sketches which may be of use.

Whether or not the boat is tackled alone, the centre-board assembly jig makes the job not only easier but a sounder one into the bargain. An item well worth the small amount of trouble to make.

The other items are by way of being 'gadgets'. Probably they may not be original but they may be of interest. At least they work and are simple to make.

## Jig for single handed assembly of centreboard case to hull.



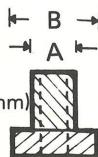
Jig in use showing how centre board case is clamped into hull for drilling of bottom fixing screw holes, countersinking, glueing and final assembly. A light lath with central hole can be placed over top end of one of the screws and, if fitting inside hull, ensures case is plumb and central.

A = Close fit into centreboard slot.

B = A + 3/8in. (9mm)

C = Length of centreboard slot.

D = 1/4in. (6mm) or 5/16in. (8mm) Mild Steel bar threaded each end. Length to suit depth of centre-board case + thickness of strong-backs (E) and to allow for washers, nuts and lock nuts.



Make from 2 pieces  
2in. x 1in. (51mm x 26mm)  
soft wood. Glue  
and screw together.

## Spar stowage when boat is 'trailed'

Having a V.W. caravan as transport, I gave up the idea of carrying my Mirror on the roof, and set about making a trailer. The finished outfit grew up from a Mini rear sub-frame.

With the suspension units pushed out on two pieces of 2in. (51mm) angle and a

tubular backbone, it tows like a dream. I won't go into the construction of the trailer and only mention it as the starting point and the need to secure the boat, from which the spar stowage items grew.

The after unit started out as a strong-back or spreader to relieve the gunwales of the compressive strains of the lashing. It is



the mast groove. It provides an ideal ridge pole for the storage cover which, through a winter of fairly wet weather, has kept the boat dry and with no 'pools' in the cover.

**Aft Unit**

Technical drawing of the Aft Unit showing dimensions and components. The unit is a long, narrow beam with a central raised section. Key dimensions and components are labeled:

- Overall length:** 54ins (1.372m) (or to suit beam at lashing point)
- Central raised section width:** 15in (381mm)
- Central raised section height:** 4in (102mm)
- Central raised section width (inner):** 3 1/2in (89mm)
- Central raised section width (outer):** 4in (102mm)
- Central raised section height (inner):** 3 3/4in (82mm)
- Central raised section height (outer):** 1 7/8in (47mm)
- Central raised section material:** 4in x 1in (102mm x 26mm)
- Central raised section component:** Awning hooks
- End components:** A (lashing point), B (end of beam)

Mast

2 off 1 1/2in (38mm) No 10 Round-head brass screws with brass washer silver soldered under head

Aft →

Diagram illustrating the aft unit assembly. The unit is shown mounted on a base. A label points to the top of the unit: "Screws and awning hooks as for aft unit". Another label points to the angled surface of the unit: "Angled to suit slope of foredeck — keeping check vertical". A label points to the base of the unit: "1/8in (3mm) Cork". A label points to the front of the unit: "Forward". A label points to the bottom of the unit: "Block 'C' to be a good fit (but not tight) in mast step".

7in (178mm)  
 7/8" Blockboard (22mm)  
 4in (120mm)  
 2in x 1in (51mm x 26mm)  
 C  
 15in (381mm)

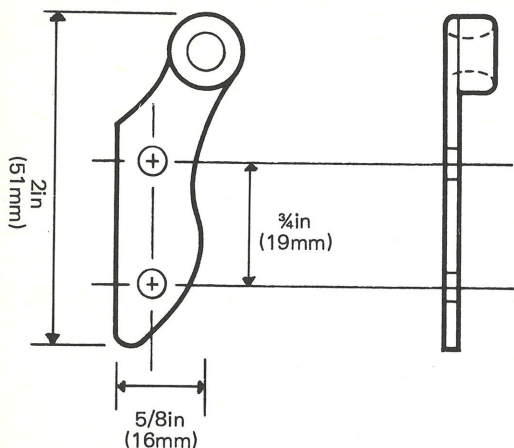
To secure the spars in their respective slots I have used 3/16in. (4mm) shock cord. The length is dependent upon the dimensions of the unit but a general description will suffice.

A suitable length is middled and an eye seized in the bight, the two free ends are seized together. The eye is placed over one of the screws (hence the washer) and the shock cord passed over a spar and under an awning hook (and so on) to the other screw.

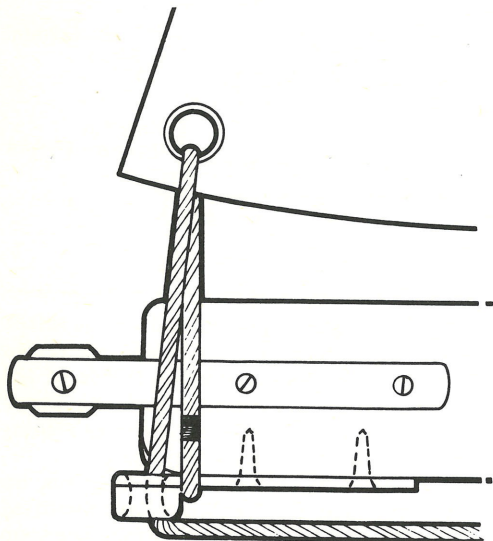
To keep the forward unit in place on whichever mast step is used, I have modified the boom end of the kicking strap. The loop which previously passed over the boom has been made detachable by inserting a toggle and eye. This can be readily resecured around the mast in its stowed position and is easily bowsed down. The jamb cleat of the lower block is quite adequate security but it could be 'backed up' by a suitable, hooked-end, shock cord.



## Fitting for tack downhaul.



1/4 in. (6mm) brass nut silver soldered to 1/16 in. (1.5mm) brass plate, thread drilled out, countersunk both sides and filed smooth. File off and emery smooth external sharp edges, drill and countersink for wood screws.

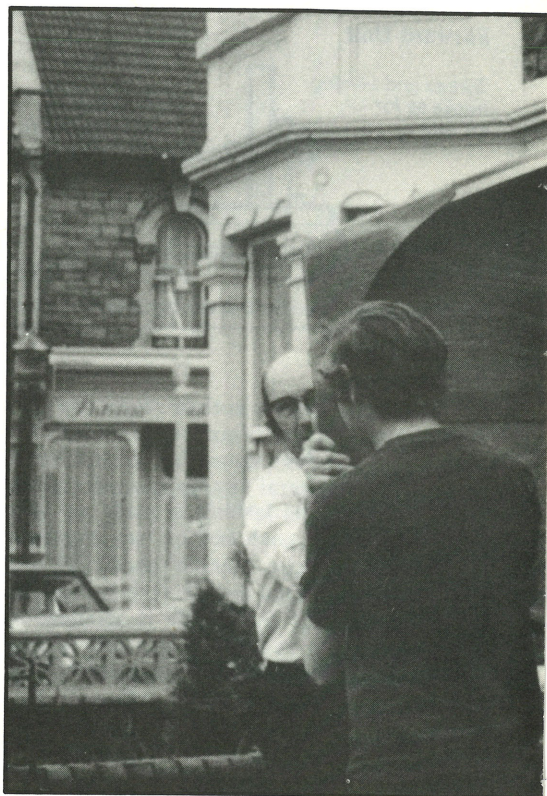


A light lanyard, with a soft eye in one end, provides the 'downhaul.' The eye is looped over the 'bush,' the running end passes under the boom, up and through the tack cringle then downwards through the bush, finally it is led aft (on the u/side of the boom) to a tubular cleat.

## Motor cycling Mariners

by Peter Thomas

There must be over 50,000 stories of how Mirror people bought or built their boats, but as each one is different, so must the reason behind the stories also vary. At the start, dinghy sailing did not appear on our outdoor sports agenda, competition motorcycling did, also camping, but not sailing. Now in the scheme of things, none of the former goes on in the Summer (no mud) whilst bags of the latter is in progress (in mud) particularly on Bank Holiday. This is why we, and I'd better explain that includes Martin Palmer and Brian Lloyd, having eluded our womenfolk, were leaning on a railing overlooking Christchurch harbour, talking of this and that, mainly that, and watching the obviously



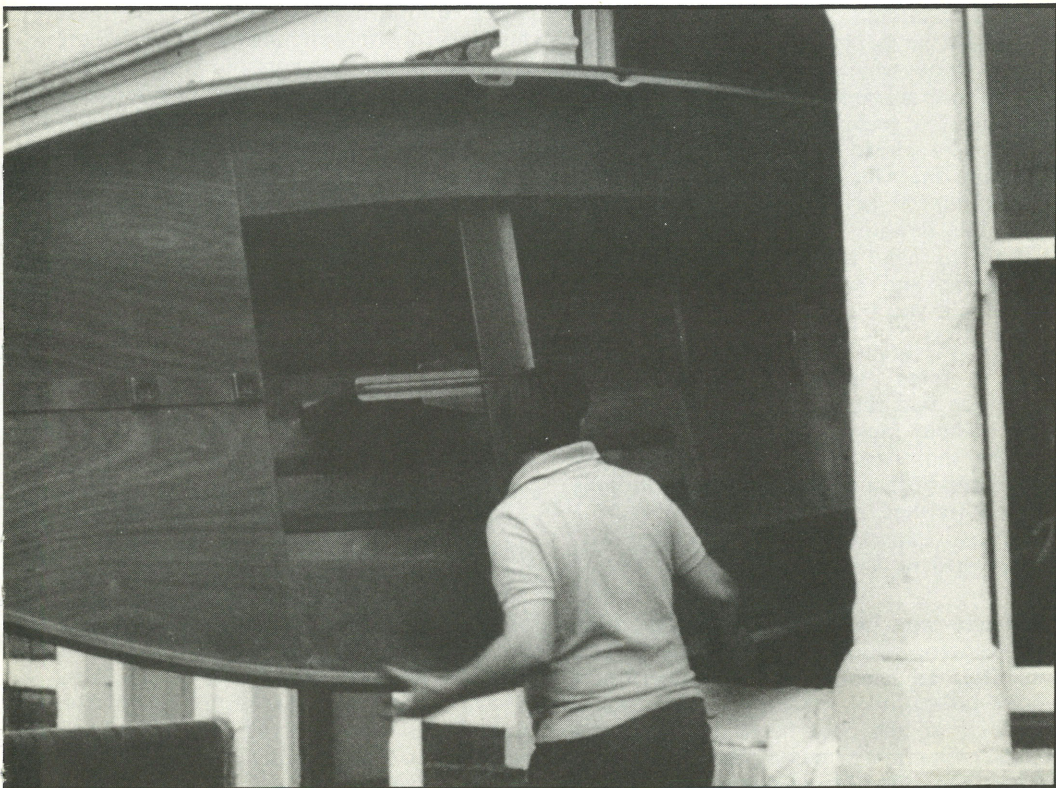


happy people messing about in boats of all sizes.

When you consider that our combined sea-going experience consisted of two holidays on the Broads, expertise with atomic submarines in the bath, and a number of tasteless jokes about cows and the Isle of Wight ferry, the decision taken there and then to each build a Mirror seemed rather bold. Why a Mirror? we were asked among other things. Well, bearing in mind our national heritage, it didn't seem right to follow in Drake's footsteps by going to sea in a pea-green polystyrene hip-bath, anyway, the wife liked the colour of the sails, the price was right, and there seemed to be 'fahsunds of 'em about.'

My kit arrived first, and surveying the bits of numbered wood strewn about the garage, and my total woodworking experience comprising four rickety shelves and a fret-work piperack inscribed 'Bless this House' it did not seem possible that a seaworthy craft could emerge. However by Christmas

Martin's kit and mine had been started. Martin, liking his comfort, actually persuaded his mother to agree to his building in the front parlour of their terraced house, dismissing the demolition of the front windows for removal as a mere detail. My rusty Ford was destined to get even rustier in the drive when some ply fell off the back of a lorry and cradles were laid down in the garage. Brian appeared to do nothing, but went about with the air of a man who knows something, and helped us both in turn. Like everyone, we quickly had to wrestle with the tape and fibreglassing, and while Martin's dustbin filled up with solid jam jars of resin, due to a parlour that wouldn't stay cool, I resorted to covering the boat with sheets of polythene, and blowing the fuses of borrowed fan heaters below. The result was the same although Martin's rug still crunches when you walk on it. Brian still did nothing about his kit, and we began to wonder and mutter to each other about him when he wasn't helping us. I should





have mentioned that my wife's own kit was well under way and we held sleepy conversations over cocoa about gunwales and relaxation classes without either understanding the other. Being engineers was definitely a handicap, our solemn deliberations with rule square and level, drew ill-concealed mirth from the sailing types at the new Club we had joined. Keynes Park S.C. near Cirencester, Glos.

Came the Spring, and my neighbours were mildly disappointed that my winter in the garage was not in fact an acclimatisation exercise for a fresh attempt on Everest, my backache rivalled the wife's and Martin's neighbours had their worst fears confirmed when a gang of those rough motor-cycling types enthusiastically stripped out the downstairs windows and carried 25134 out like a Druid's sacrifice. Brian's neighbour turned out to be a Mirror owner, which must have a bearing on the bombshell he proceeded to drop. He wasn't going to build at all, the affluent bathbun was going up to Leicester to pick up a built, but not painted 28250, and could he borrow my nice new trailer? I don't know what registered more, the fact that all our work was worth comparatively little or the feeling that our un-launched boats were already old. It's at times like this that one calls to mind all the wise old West Country sayings learnt at mother's knee, like beware the viper in your pint, a bird in the hand is worth three promises in the palais, and a wet bird never flies at night ... if you follow me.

Now the gravel pit on which we sail is deep in some places and very shallow in others, so that the maiden launches did not pass without incident. My boat was blown off the shore and had to be retrieved by the rescue boat and Brian's first sail with me as crew finished up in some tall rushes from which we extricated ourselves hoping that no-one had noticed, but of course they all had.

Martin launched on a sunny day when people were not even wearing life jackets and after an uneventful sail was returning elated rather quicker than intended. Intent on doing all the right things he had somewhat prematurely raised the board and rudder and was bearing down on an exotic

fibre-glass creation on the shore complete with horrified owner. Intent on preventing a collision. Martin leapt overboard straight into one of our deeper shallows and with some surprise sank into 20ft. of water, providing the gallery with a laugh that is still talked about. He spent the rest of the day explaining why he was the only bloke soaked to the skin in a heat-wave.

As we became more proficient, our competitive urge drove us into racing, and of course into situations we had been avoiding. The Commodore was quick to point out that the correct nautical reply to a call of 'Starboard' in cases of uncertainty is not 'Knickers!' It was inevitable that we should capsize sometime, and we all talked about going out and doing it deliberately (for practice you know) but never seemed to get around to it. Martin was first, going over in a squall complete with wife, I made only another 100 yards laughing on the toe straps when the main sheet got away. Had the wife not just had her hair done, had I tied my glasses to my life jacket, and had the eldest child, bored with watching her father fall off motorcycles, not been consumed with delight when both parents returned dripping, it would have been a jollier occasion. I had just been convinced that the manly thing to do would be to go straight out again when the little woman steamed up, clad in an assortment of borrowed clothing, and announced with some force and in detail that she was not wearing any underwear, was somewhat cold as a result, and wished to return home forthwith.

Encouraged by improvement at club level. I rashly entered the 'Open' at Chew Valley Lake, and was shattered to get a best finish of 54th, still I did see the top boys fleetingly on the horizon and at the prizegiving. Brian and Martin were a reluctant pit crew on this event, put off by the rumour that not only had the boats to be disinfected, but the crews had to wade through a sheep dip, which was happily not the case. So ended our first season for we non-wet-suit-owning weaklings, and the bikes are out again but an informed Father Christmas showed up with a spinnaker, so watch out for us at the tail end of the Open Fleets, we don't sail so much as ride the things in a semi-controlled fashion. You have been warned!



# FITTING OUT

## Rigging & Spars

by Peter Barnes

The rigging and spars of the Mirror Dinghy, although of a one design, can, because of certain optional features, become a little varied and correspondingly confusing for the beginner. The keynote for the efficient rig is simplicity, to ask yourself "is it easy to use?" and "is it absolutely necessary?"

In the following, I have tried to pick out some of the best ideas.

### Mast

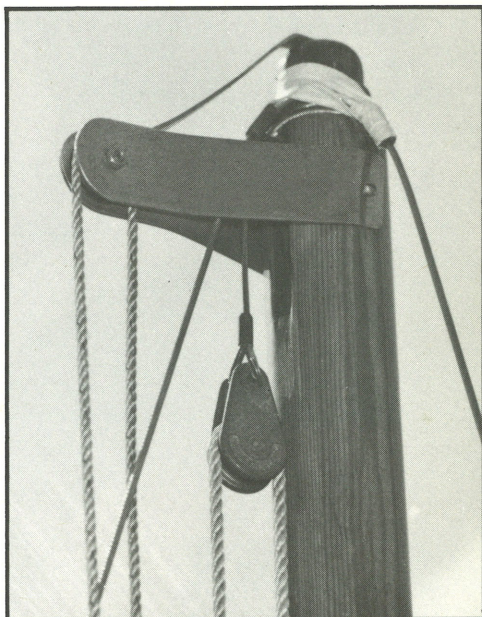
Whether fir or spruce it should be straight and stiff, adjusted on the stays to give a slight rake aft. Metal masts should be of minimum weight permitted in the Rules with hard wearing mahogany end pieces. The position of the mast step on the foredeck should initially be in the mid position of the tolerance, the best reason for this is that two particular past National Champions have theirs at the extreme opposite ends.

### Fittings

*Halyard cleats.* Best buy are the Clamcleats Junior with lead set at 90 degrees to each other facing aft, this stops the jib sheet catching when tacking.

*Spinnaker pole fixing eye.* Choose one that the jib does not snag. The position of this fitting should be about 6– 8in. (153 mm – 204mm) above the gooseneck, depending on whether a crane is used or not.

*Spinnaker cranes.* It is essential to prevent the halyard snagging on the spars by using a crane or a strop similar to that used for the jib.



### Gaff

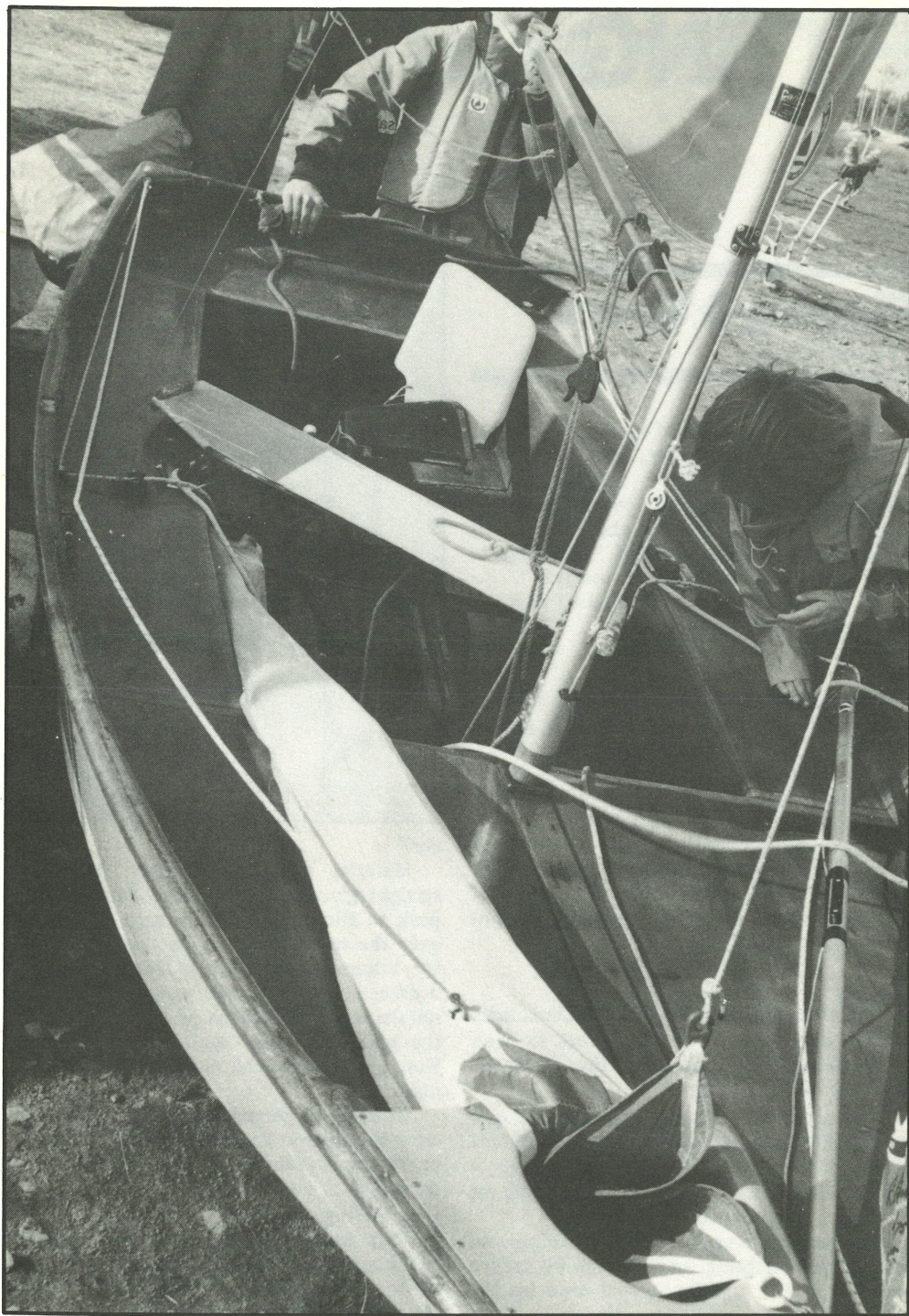
Material should preferably be spruce, straight grained, and tapered from band to peak to allow the easiest passage of the wind over the spar. It would be unwise to go to the minimum tolerance as this would give a degree of bend which would destroy any sail shape set up. Bear in mind the bending of the gaff is a buffer against strong gusts of wind so reducing the resultant shocks to the mast.

While some people believe the lighter the crew the thinner the gaff, I prefer my gaff to be in the middle of the tolerance allowed, regardless of crew weight.

### Gaff Fittings

*Gaff band.* The stainless steel type has advantages over the brass, enabling the gaff to be held closer to the mast, and has less tendency to bend out of shape.







## Boom

Material preferably spruce, full size and straight.

## Boom Fittings

*Outhaul.* This permitted fitting allows easier adjustment to the fullness of the mainsail and consists usually of a length of track, a single pulley, dead eye and cleat. This arrangement, however, if fitted badly can be dangerous. The pulley, if fixed on the side of the boom and not protected with a guard, could catch someone else's shroud and dismast them, also as the boom is at head height, lead cleats forward of the kicking strap block, or only fit them on top.

*Downhaul.* This fitting is to allow the flow of the mainsail to be moved fore or aft; by tightening the downhaul the flow is moved forward. The best is once again the simplest; from a dead eye on top of the boom a cord is passed through the tack back through the dead eye or a cheek pulley on side of the boom and then to a cleat.

*Mainsheet block.* Simple single pulley type positioned vertically over the transom to give a downward pull and not a combined forward and down.

*Kicking Strap.* Tensioned according to the strength of the winds, very light winds — no tension. Heavy winds — arm over the boom tension. Expensive goodies are not necessary, a clamcleat and pulley are quite adequate for the job.

## Hull Fittings

*Mainsheet block.* It would be advisable not to use the swivelling becket type, but to tie with nylon cord and seal to a dead eye, this will give the right amount of flexibility without the tendency to spin or jamb over.

*Shroud Plates.* Chain plates are the best buy to give adjustment to the standing rigging as they are relatively fool proof. Bottle screws are, for the Mirror, expensive and totally unnecessary. The standard method of tying the forestay is by far the best as it allows a tight rigging but will stretch under load taking unnecessary strains from the mast.

## Shrouds

The 'as supplied' galvanized are more than strong enough for the job and should last at least three to four years before considering replacement; as opposed to stainless they

will show obvious signs of deterioration before failure and apart from appearance are adequate for the job. When stainless are used, which I personally prefer, a good buy is 3/32in. dia. or 2.5mm with the jibstrop and forestay combined.

## Halyards

Pre-stretched or non-stretch Terylene is the best to use; light for the jib — say — 4mm and 6mm for the main.

## Jib Sheets

As with the main, it is sometimes a disadvantage to have several different thicknesses to choose from, particularly choosing your ultra light hollow sheets to go to sea on a hot summer's day chasing zephyrs, when at the finish of a race a gorilla on a trapeze wire would be more helpful. Choose a sheet easy on the hands of an average size about 12mm braided and stick with it.

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# The Hull

by Derek Beere

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The hull of your boat will need careful attention if you want to win races.

Start by checking the alignment of your skeg and rubbing strakes. Just sight along them. If you cannot see an obvious error then there is nothing to worry about. The slot in the skeg will need to be faired off fore and aft and the trailing edge radiused as much as permissible. Ensure the leading and trailing edges of the bilge pieces are faired off. Check that most, if not all, the hull tapering is smooth.

Go over the hull surface, filling any blemishes in with Plastic Padding or similar fillers, followed by rubbing down with 400 or 600 wet and dry. Do not worry about lumps or bumps provided the surface is smooth. For polishing, use metal or car polish — it does help.

On the inside, the hull will need a non-slip surface on the floor. The cheapest is sand or sawdust sprinkled on wet varnish.

A self-bailer fitted level with the aft end of the centre board casing, is a great help in strong winds. In these conditions, toe straps are also important. The fitting of these has to suit individual requirement, but do not skimp. Look at other boats and ensure that



your toe straps inspire confidence in a force six or seven. Seepage into the buoyancy tanks should not be tolerated. Find out where it is getting in, seal up and paint over.

Most hulls weigh over the minimum, but do not have the heaviest hull in your Club. Use lightweight fittings and keep everything simple.

Storing the hull under cover between races helps it to dry out. With careful launching and recovery a hull that has been brought to racing trim will require very little effort to keep it that way.

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## Centreboard and Rudder

by John Reece

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The centreboard and rudder should be the maximum size allowed by Class rules. The leading edge of the centreboard is rounded and the rear is faired off from two inches (51mm) in, to a one eighth cut off (3mm). This one eighth width helps to prevent the shock-cord being cut when raising and lowering the centreboard; it also creates less turbulence as the water flows off the board. The rudder should also have a rounded leading edge. The trailing edge is faired off, but here only one inch (26mm) fairing is allowed. Together, the centreboard and rudder blade add up to over seven square feet of wetted surface area; as smooth a surface as possible should be obtained. The smoother they are the faster you go.

Too much sloppyness at the tiller caused by wear in the tiller slot and rudder head is best eliminated by screwing and glueing them together. Although this makes it more difficult to stow in the boat or boot of the car, it is well rewarded by the absence of free movement, which is essential for good helming.

You will need a 2in. (51mm) number ten countersunk stainless steel screw, Araldite or Aerolite 306 glue, a 1/8in. (3mm) and a 7/32 in. (5mm) drill and a countersink bit. Assemble the tiller and rudder using the pin to hold them together, line up the tiller with the rudder blade. Using the 1/8in. drill, drill a pilot hole roughly two inches deep half an

inch behind the tiller slot. Remove the tiller and drill through the tiller pilot hole with the 7/32in. drill then countersink the hole just deep enough to take the screw.

Using coarse grit sandpaper, rub down the faces to be joined. Following the makers instructions, glue the tiller to the rudder, holding them in place with the stainless steel screw. When the glue has thoroughly hardened, cut off the rudder tongue which projects through the tiller, at the same time cut off the end of the tiller which overhangs the rudder stock — there is nothing the main sheet can catch on to. Now sandpaper smooth and varnish.

Another cause of free play is wear in the rudder pintles. Too much wear, and the extra strain in strong winds, when you're both hanging out, will snap them off.

It's quite probable you will then capsize. Even if you do manage to stay upright your racing is over. In a National or Area Championship that's a day's enjoyment spoilt.

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## Sails

by Roy Partridge

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They are the only part of the boat to promote forward direction using hull shape, centreboard and rudder to convert this power to sail against the wind, so are we getting the most out of our sails?

### Mainsail

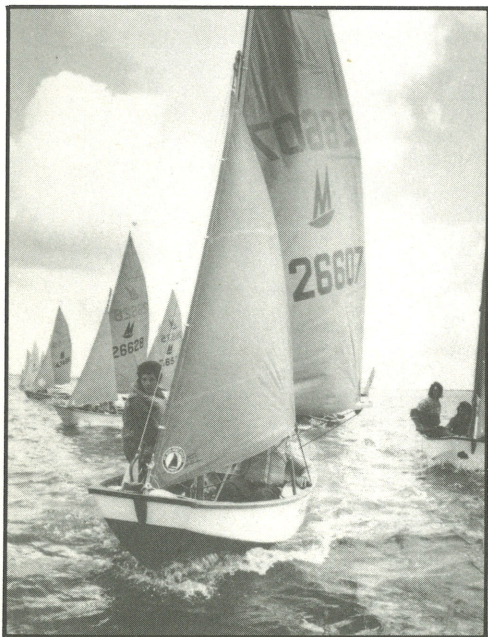
Slide the head up the luff groove of the gaff and tie to the peak so that the head of the sail is no higher than the bottom of the black band when under tension.

The gaff is partly raised to facilitate winding the rope on the sail below the gaff jaws loosely round the mast without trapping underneath any halyards or downhauls. Raise the gaff until tight against the mast, slip the downhaul round the eye on the boom and into the clam cleat. Also tie the bottom of the tack round the mast. Both ropes around the mast need to be tightened without distorting the line of the luff. Shackle the clew of the sail to the outhaul. Now all you have to do is adjust the downhaul and outhaul to obtain maximum drive. For medium airs, maximum camber should be



about 12in. (305mm) away from the boom, slightly less for heavy airs and a little more for light airs. The maximum camber when sailing should under all strengths of wind be on, or just ahead of, an imaginary line drawn from the peak of the sail down the middle to the foot. Except under the lightest of winds, try and remove any wrinkles on the sail by adjustment of downhaul and outhaul. The tension of the kicking strap will pull the gaff down and away from the mast enough for most airs, but in the lightest of airs let off the main halyard by about 1in. (26mm) instead. The top batten must be very flexible and the forward ends of the other battens should be well thinned. It is far better to be a little shorter in length than too long. If the sail does not look smooth and curvy, work on the basis that it is far more likely to be you that's wrong, not the sailmaker.

The jib's job is to deflect the wind faster on to and over the leeward side of the main in order to lower the pressure, increasing the pressure difference between leeward and windward side of mainsail and therefore drive. With the simple and efficient fittings mentioned under 'Rigging,' it is fairly easy to adjust your sails on the water providing it is not blowing a gale – so always try and improve the shape and drive.



Although the jib is so small compared with the mainsail, on beating it helps to develop power from itself and the mainsail far in excess of its size. Make sure that you adjust the main in conjunction with the crew's jib who is endeavouring to keep it full while the helm pinches too much again and slows down.

The jib luff takes some of the strain on the forward shroud when beating to windward, as the pull down on the boom from the mainsheet is quite considerable. If the non-stretch tape on the luff takes too much strain, you will cause a gulley to form behind the luff tape and spoil your windward performance. Providing the jib is attached as low as possible to the deck and the mast raked back a little, the jib sheet will be pulling equally on the foot and the leech if the fairlead is where it was designed to go on the boat. If not, move fairlead back to reduce tension on the leech, and as this hollows out in strong winds it will lessen any backwinding of the main. Aim to get a flattish jib shape as this seems to increase windward ability and speed.

Now that the sails are pulling well, your position and weight in the boat must be considered to reduce friction as much as possible.

On beating:—

1. Keep the boat upright above a Force 1.
2. Anticipate gusts by leaning into the wind as it hits you.
3. Shelter behind the crew so that there is only one body in the wind.
4. Sit in the bottom of the boat in light winds.
5. Have your weight well forward in flat seas.

On Reaching:—

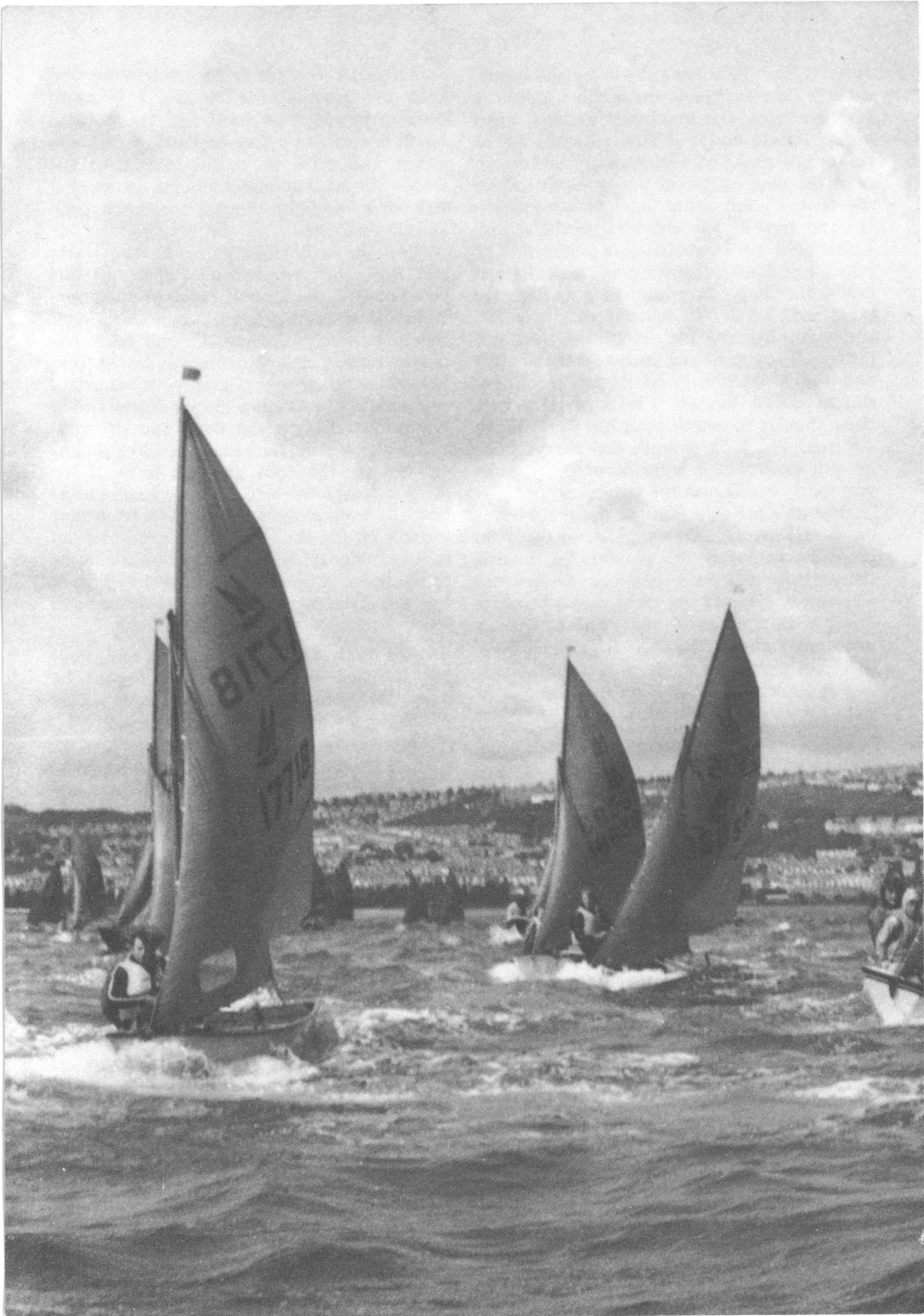
Much the same as on beating except 3 is not very practicable and in 5 your weight comes back with strong winds.

6. Downhaul and outhaul may be slackened off slightly, provided they can be re-adjusted easily for the beat.

On Running:—

7. Lean boat to windward until the boat stays on a straight course without pressure on the tiller.
8. Weight well forward except in strong winds.











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# Sail setting

by Raymond Jeckells

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Sails are very much like the English weather, they are always changing and are a never failing prime topic of conversation particularly in Yacht Club Bars after a big race. Consequently with such a propensity of talent expounding their knowledge on this subject it is inevitable that any article on sails will cut across the ideas and theories of a number of people. I have endeavoured to set out below tips and suggestions which I hope will be found generally useful.

At the present time, every Mirror sailing dinghy comes equipped with a suit of our standard sails. Both boat and sails are built in large production runs and inevitably we are encouraged to keep the price of our products as low as possible so that the boat may appeal to a wide range of enthusiasts. Over the years we have improved and altered our manufacturing techniques, so that we now give extremely good value for money. Obviously in a production of this type we are only able to make sails to a specific shape and it is not practical to vary this to suit individual requirements.

During the course of production runs, a frequent periodic test is taken to ensure the standard is maintained. The Mirror mainsail is notoriously difficult to set efficiently, but this also means that it is capable of a number of variations which allow for different shapes to the same sail to accommodate different conditions. For the complete beginner we suggest that the sails are set in accordance with our detailed leaflet. It is usual to set the jib first and to get the best performance it should be hoisted so that the luff is as straight as possible under all conditions.

The mainsail requires a different technique. Basically this requires that the mainsail head be drawn along the gaff to the top black band (after the insertion of the battens). The tack should be attached with 100 – 150mm freedom; and the clew loosely attached to the aft end of the boom. The mainsail should then be hoisted so that the main halyard shackle is as nearly through

the mast sheave hole as possible thus ensuring that the gaff is virtually upright and is hard against the mast on all points of sailing.

The tack of the sail should be tensioned to the boom so that a girt or strain line appears from the peak to the tack (this can be varied later to get a different shaped sail for different winds). After this the clew of the sail should be hauled along the boom so that the foot is just tight. Incidentally, it is a good idea, when using the standard equipment, to use the two ends of the line on the clew for different purposes. One to haul the sail aft towards the end of the boom and the other to be lashed around the boom pulling it up to the foot of the sail thus increasing the headroom for the helmsman. The luff lacing should be passed around the mast through the next eyelet below and so on down to the tack corner tensioning it in such a way that it just holds the luff at its natural distance from the mast – no attempt should be made to draw the luff into the mast as this will set unfair strainlines into the sail.

The sail, having been tensioned and hoisted as above, should fill out into a reasonable curve when on the wind, and the greatest depth of flow will be approximately 60cm aft of the mast. Experience will soon enable the helmsman to adjust the tensions at the tack and clew corners, so that the flow position is varied to suit the prevailing wind conditions. Decreasing the tension on the luff of the sail will make the sail set with greater flow depth and will move the flow further aft. Increased tension will have the reverse effect. Generally speaking a full sail is required for downwind and lightweather sailing and a flat sail is required for windward work and heavyweather sailing. Finally the kicking strap should be tensioned so that the twist in the mainsail is reduced to the minimum. By twist we mean that the leech at the top twists out of the plane of the foot and boom. Thus with the addition of the sheets the boat should now be ready for sailing.

In drafting these descriptions a conscious attempt has been made to keep to the standard equipment supplied with the boat, but one of the joys of this dinghy is the ability to add simple improvements to the rig whilst maintaining the strict one-design principles, thus allowing the ingenious to



exercise their talents and the mere mortals amongst us to copy them slavishly, thereby effecting an all round improvement in the handling of one's boat and equipment. Given below are one or two simple sail setting devices to make for better sail 'handleability.' A thicker tack line fastened to the boom on one side of the sail, led up through the eye in the tack of the sail, down through an eye on the other side of the boom, then aft to a suitably placed jamb cleat, will enable the helmsman (or crew) to adjust the luff tension while underway without greatly upsetting the balance of the boat, i.e. producing a Cunningham hole effect.

Many methods have been tried which enable the gaff to be hoisted more vertical than the standard equipment allows. Perhaps the most simple is for a flatter brass or stainless steel gaff span to be employed and the halyard knotted through this span rather than attached to the shackle as in the normal equipment.

The other moveable point on the mainsail is the clew outhaul: a short (25cm) length of mast track and slide attached to the top of the aft end of the boom, with a line from the slide through a small fairlead at the aft end of the track forward to a jamb-cleat positioned for easy adjustment by the helmsman (or crew). This should be coupled with a piece of strong shock cord which is led from the slide forward and fastened with sufficient tension to make the outhaul slide forward when the aft tension is released. The clew can then be shackled or tightly lashed to the slide and the tensions readily adjusted. One of the proprietary single purchase kicking strap blocks with integral jamb-cleat, makes the kicking strap very much easier to handle.

A jib window, while not really essential for sailing in open waters, gives one a feeling of added security when manoeuvring close. Incidentally, the Rules allow for a window with an internal dimension not exceeding 457mm. A round window is the largest one allowed, but this is a large slice out of a small sail and we recommend a rectangular window to be the most suitable.

Sanding down the inboard end of the battens so that they blend more readily into the sail, at the forward end helps the sail to set, although there are now a number of

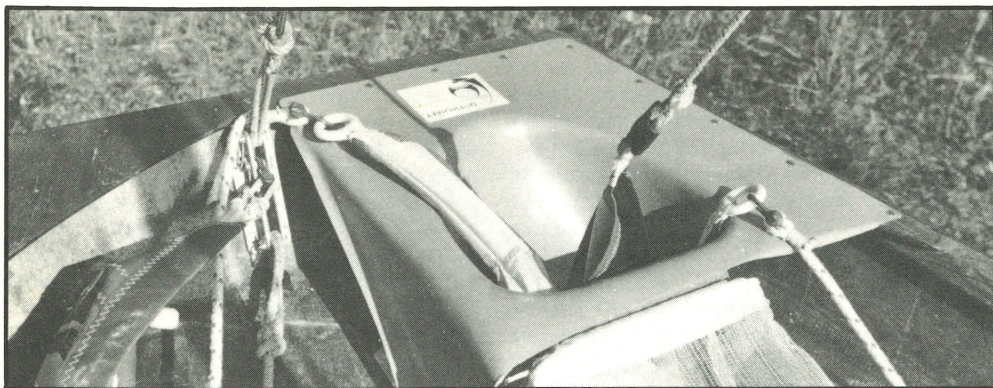
fibreglass battens on the market and these are very successful, and are usually obtainable in different degrees of stiffness. It should be noted that Mirror Rules stipulate that batten pockets must be of the standard width and, therefore, if one is using a narrower batten it is best to use it in conjunction with the spade ends as an additional item. We recommend that the more flexible type of battens are required but it might be found that the centre batten could be a stiff one.

### Spinnakers

A spinnaker, while not being part of the original equipment of the boat, is a must if serious racing is contemplated. The standard pack for the spinnaker comprises the sail complete with guys and racing numbers plus spinnaker boom, halyard, boom rings and halyard blocks, together with a complete set of fitting instructions. The spinnaker is a running sail and is intended for this purpose. However, it is becoming more and more apparent the sail should be cut for reaching so that it can be used on a great number of occasions. By cutting the sail with the cloths offering minimum distortion and by reducing the width it is possible to cut a reasonably acceptable reaching sail.

The actual movements of hoisting and setting a Mirror spinnaker are very similar to those of any other dinghy and it is not proposed to deal with that aspect in this article. It is becoming more and more usual to set a spinnaker from a chute and a number of excellent designs are now finding their way onto the market, but one very cheap and simple spinnaker chute has been seen to work very efficiently and that is a plastic sink tidy (like the one normally used to drain knives and forks in the washing up bowl) — it is doctored by having its perforated end cut out. This makes an ideal mouth. The sock of a spinnaker chute can easily be made from a piece of nylon cloth with a tape at the small end. The spinnaker chute is then screwed to the gunwale on one side of the boat about 30cm aft and its sock end tied to a point about halfway along the boat. Incidentally when ordering the spinnaker it is not necessary to ask for a chute patch to be fitted as they are standard articles on all our sails. In response to many requests we have now developed what we call Hi Fli





rating quality sails. These are designed for the very keen championship enthusiasts. They are individually made in crisp non-porous minimum distortion material. The jib is fitted with wool feelers so that the helmsman can get immediate response to wind variations and 'feel' the boat to windward. The mainsails are supplied with tapered fibreglass battens. Continual experiment and development is always happening to sailmaking materials and cutting techniques.

We have recently been carrying out experiments on a cloth which is showing 30% less distortion than the normal cloth. It is hoped that this will be on the market shortly.

### **Sail Maintenance**

Sailcloth is very hard material and as such the stitches do not bed into the cloth but lie flat on the surface, therefore, there is a tendency for them to chafe through over a period of time.

The points of danger to watch in this respect are primarily the batten pockets and the clew of the mainsail and jib and the tablings (hems) on both sails. It is not a good idea to leave the sails flapping head to wind between races, this is very noticeable on the clew of the jib which very quickly shows wear when it is allowed to bang against the mast.

When stowing sails salt water should always be rinsed out as the salt dries on the surface and unnaturally hardens the cloth. Creasing should be avoided in the sails and it is recommended that the sails be loosely folded so that the marbling effect is resisted as much as possible. Also, although the window plastic material is very strong it can

sometimes crack when pulled undone in cold weather.

The numbers and insignia on modern sails are now stuck onto the sail surface and, whilst this is quite satisfactory in normal use, care should be taken to see that the edges of the numbers do not lift, and if they do, press them firmly back into position. With reasonable care and attention the sails should give two/three years adequate service. The jib usually pulls out of shape first.

When ordering a second suit of sails they should be ordered to complement the original suit. A standard suit of sails is made with a medium flow and we would think that a complementary mainsail should be cut full so that it is kept for light weather. Also it is easier to flatten a full sail (if you require it flatter later on in its life,) than it is to make a flat one into a full one.

### **Adjustments and Alterations**

Should your sails require any adjustments or alterations to overcome slack or tight leeches, tight or loose foots, it is usually a matter of tightening or easing seams and the adjustments are normally of a comparatively simple nature. However, when sending a sail for adjustment, it is much easier for the customer to describe the fault by means of a diagram, than to enter into a lengthy description of the fault.

The above article has purposely kept away from discussion of the relative advantages of differing sheet lead positions as these are fairly tightly controlled on the dinghy.

In conclusion we have a full technical staff available at Wroxham and they will be pleased to help you on any point to do with the handling or setting of your sails.



# CRUISING YARNS

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## Holidays in the sun

by Alec Farmer

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To those Mirror folk who are also campers or caravanners, a holiday by the lakeside in South West France could be the answer to the problem of where to spend the summer break. Situated in a State Forest 36 miles North West of Bordeaux is the Base Departementale de Sports et de Loisirs de Bombannes. Only large scale maps will show Bombannes as, apart from the Base, it only consists of one or two foresters' cottages. The nearest village is Maubuisson and that is on the extreme Southern point of Lake Carcans-Hourtin, the largest lake in France.

The lake itself is 12 miles long and 2 miles wide and has a fine sandy beach. The bottom of the lake is also sandy and, apart from shallow waters on the Eastern side of the lake, there are no obstructions to worry the sailor. Boats can be easily moored or drawn up on the beach and launching trolleys are not necessary.

Only 2 miles away from Bombannes is the small seaside village of Carcans-Plage which has the typical silver sand and the dunes of the Cote d'Argent. The Atlantic breakers pound along the shore and, whilst the Mirror is safe on Lake Hourtin, it is the surf-board that reigns supreme at Carcans-Plage. At the beach the Municipality rent out *chalets de vacances* for the months of July or August, or by the week during other months. The chalets are fully equipped to sleep six people. Back inland at Maubuisson there are two main hotels right by the lakeside, and information about them or the *chalets de vacances* can be obtained from La Mairie, Carcans 33, Gironde, France, enclosing an International Reply Coupon.

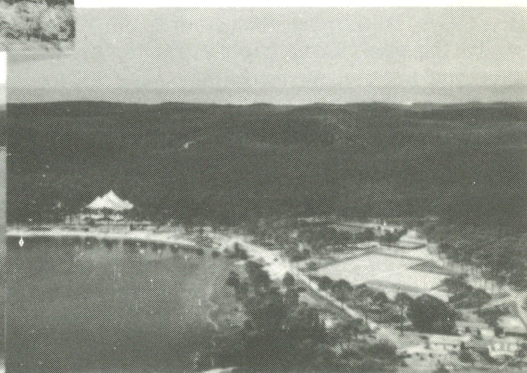
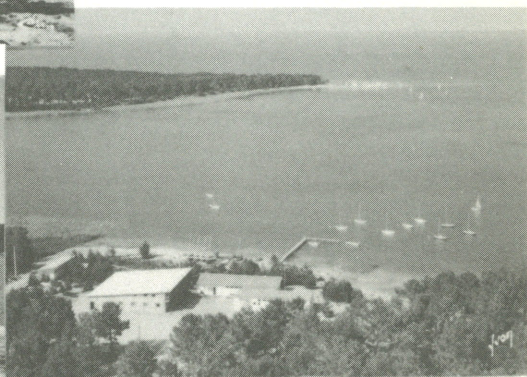
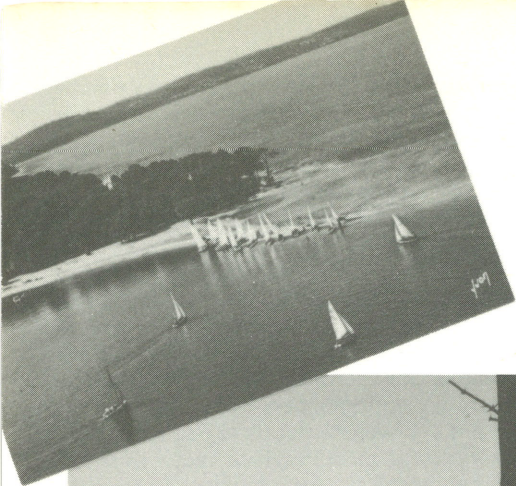
But the camper-caravanner will want to experience the pleasure of the unique Base de Bombannes. The Base was first opened in 1971 and is a joint venture of a group of architects, the French State Forestry Commission and the Local Government of Gironde. The whole Base comprises some 200 hectares and in 1975 a series of delightful holiday flatlets was built to nestle around one of the large sand dunes. Each has its own balcony, kitchen, bedroom, sitting room, bath and loo. The Base also has an area for 110 caravans each equipped with 220 volt power connections and waste water disposal outlets. In addition, there are two camping areas taking some 250 or more tents. On the tenting grounds cars are not allowed, apart from unloading or loading equipment, and this makes for peace and quiet and a dust free atmosphere. However, bicycles can be hired by the day from the camp offices and there are many enjoyable cycle tracks and walks through the forest. Camping is under the Maritime Pines on moss covered sandy soil and there is plenty of room between tents. Toilets are 'typically French' and there are enough of them to cope with campers in the peak months. Hot showers are available and there are also water points and washing up points, whilst at the camp office there is an electric iron and a washing machine that can be hired. Electric razor and hair dryer sockets are at each group of wash places. A camp shop is open every morning but while this is useful for bread and milk, there is a greater variety of produce at more competitive prices at the nearby shops of Maubuisson.

As its name implies, the Base caters for sports and leisure activities and these are very wide reaching. There are 10 new hard tennis courts, with a charge of 10 Francs per hour, and by the side is a free practice wall.



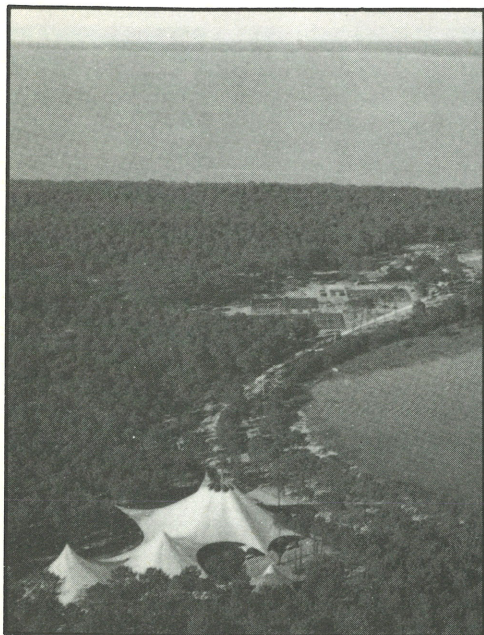








Nearby is an Olympic size swimming pool with subsidiary learner pool and kiddies splash pool for which an entrance fee of 3 Francs is paid. The tennis and swimming are close to the cultural centre and all three border the lakeside. The cultural centre is housed in a gigantic ultra modern tent and consists of several groups of diamond and triangular shaped rooms. The use of all



the facilities in the cultural centre is free and this is of particular value to Mums and Dads who can safely leave the children for a morning or an afternoon in the care of trained staff. In different rooms they can play with toys, play table tennis or paint, whilst the boys have a fully equipped workshop and the girls have a kitchen. The young ones have beds and the tiny tots have their cots and high chairs. In yet another room is a large library. From the cultural centre games and walks are organised and parents are included in these.

But what is happening to the Mirror dinghy all this time? On a lake where the French National Sailing Championships were held she is probably disporting herself sneaking in and out of the wind eddies, beaching on a distant spit of sand where her skipper wades ashore through the reeds

and flings himself down to sunbathe on the deserted beach. Or perhaps she has gone across the lake to take the skipper's wife shopping, to post a letter back home and to have a coup de vin at the bar before returning, on not too zig zag a course, across the lake.

Adjacent to the caravanning and camping sites, and on the shore of the lake is the U.C.P.A. sailing school which takes day as well as resident members. Here we can see Optimists, Jets, Torches and 420's at work. If there are any members of the family who have not yet been bitten by the sailing bug — here is their chance. Provided they can swim, they can enrol as day members. For a very reasonable fee all equipment is provided (including life jackets) for a carefully thought out course of instruction spread over a week. This culminates in the award of a brevet and a 'passing out' regatta.

When sailing is finished for the day it is pleasant to have a relaxing swim in the warm water of the lake, where the temperature in the water averages 22°C in August. A huge appetite is usually the result at the end of a day and this either means that Mum has to provide a large meal or better still, that Dad drives them in the car the 5 minute journey to one of the several restaurants in Maubuisson. Even then the night is not over because on returning to the Base there is likely to be a musical entertainment at the Greek-style open air theatre or a film show at the cultural centre. So bedtime could be 11 p.m. or later if the skipper and crew are so minded.

All this must sound like a rich man's paradise, but it is not the case. For the caravanner only pays high season charge of about 20 Francs per day for his complete unit, and the camper about 15 Francs per day. These prices include all members of the family and the car. For those wishing to make sure of a reservation, a line to the Base at 33 Carcans France will suffice, but I should add that caravan space in school holidays will need booking well in advance. Should any Mirrorman wish to have further information he can write to me c/o The Mirror Class Association and I will do my best to help. Who knows — perhaps there may be more than one set of red sails on the lake in future.



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# A fishy story

by Ginger Moore

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Mirrors have more uses than one. For instance, the sailing variety can show up the character of one's friends much more clearly than the reflecting kind.

One Autumn, just after the Scottish Championships, I was at an old haunt of mine, fishing a 'spate' river in the Western Highlands with some friends. We were having perfect tourist weather and the clear far Cuillins were far from 'putting love on us.' Rain was our want and we had none. In the river, salmon and seatrout sulked in the gin clear near-isolated pools and hid from the sun wherever any overhanging branches on the bank offered shade and protection. Any movement on the bank, or the suggestion of a strange shadow, sent the fish sweeping in circles as if in imitation of the insect-hunting martins.

So, river fishing apparently a waste of time, we turned towards the sea and our Mirror to try for some lobsters.

Those of you familiar with lobster pots will know how unwieldy they can be, so our aim was rather an ambitious one — three men in a Mirror with three lobster pots plus mackerel lines. It is as well there was no wind. Had there been, one of the party would surely have called for mast and sails.

The outboard was shipped and we were off to our favourite lobster ground perilously near the edge of a tide rip, 12 knots at Springs which, as we grow older, we treat with ever growing concern and respect, having been caught in it on a previous trip a few years ago, but that is another story.

A large shoal of fish had been cruising the bay for several days waiting for a spate and enough water to enter the river, and we discussed the remote possibility of hooking a sea trout. Our self appointed Master Salmon Fisher firmly rejected the idea that any self respecting sea-trout would take a lowly mackerel fly. Despite the near approach of the cruising shoal we had connected with nothing more noble than a couple of mackerel and three saithe as we closed our

lobster ground, and the theory advanced appeared to have some grounds.

Our Pilot assured us he knew every rock in the place and enacted the old joke as the propeller skeg suddenly grated on the bottom where there should have been 5 fathoms. "And that," he said, "is the first." What had happened was that he had counted on the point of rock sticking up twenty yards inshore of us as being the most seaward point of a long reef running out from the shore. In fact it was the second from seaward. We were at the peak of high water extraordinary springs and had run on a rock which was normally uncovered at high water. To add to the confusion the propeller took a sideways blow, the shearing pin carried away and the engine roared, and at the same time a fish snatched at one of the fishing lines. Confusion was worse confounded when the fish ran out the slack line inboard through the nerveless fingers of our fishing member and jerked the frame, on which the line was coiled, right out of the boat.

Paddle and centreboard were the order of the day when composure had been re-established. Designed to float, the frame actually floated, and we could see it turning over slowly in the water as it payed out more line and steamed away from us. Paddling furiously we recovered the line, and playing the fish by hand as well as may be, eventually scrambled into the boat a four and a half pound sea-trout, hooked, thank goodness, well into its mouth.

And so, having laid our pots, we proceeded to the nearest stretch of convenient beach and foot slogged it back to our cottage and a wee half.

The only non-convivial member was our Master Fisherman, who mirrored his attitude to the whole affair when he wrote up the fishing log for the river that evening.

Included in his entries for the catch were the following:

Conditions — 'Bright'

Where Caught — 'Seaward of estuary'

Fly — 'Large. Hen feather'

Remarks — 'A very stupid fish.'





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# Pembrokeshire

or 'There's some Arthur Ransome in all of us!' by Donald M. Forbes

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Those of us who enjoy cruising with our Mirrors and like to have an object in view for a holiday, might do worse than spend a fortnight on the Daucleddau in Pembrokeshire.

Our family of six (counting the dog) established a base camp near Black Tar Point, close to a good slipway with access at all states of the tide.

We found this a beautiful estuary. The currents, though strong at springs, were interesting rather than dangerous. There were, we later discovered, many back eddies to help the unfortunate sailor beset by foul tides. The many bends added variety to each day's cruise. The upper waters were comparatively well protected from high winds and this suited our children.

After the Medway, our home water, we appreciated the quietness. We found the bird life very much more varied and abundant and the waters teemed with fish.

The two older children took with them an outline map of the estuary around the camp, enlarged from the 1in. Ordnance Survey map, and as they discovered each castle, harbour and creek, gave it a name and entered it on the chart. All our cruises were plotted and the original now hangs in James' bedroom. Clare keeps the ship's log. (You can trace the influence of Arthur Ransome in most children if they are allowed on the water).

Our cruises developed as the holiday progressed. There was a lively yacht station at 'Chandler's Quay' only two or three miles away which we frequently visited. When the wind was favourable, we could ignore the tide, but one Sunday when the gas ran out we just had to have a re-fill or starve and it took us two hours to beat back against both wind and tide. The banks were steep and well wooded; if we kept into the side to avoid the current we lost the wind; if we tacked across we lost fifty yards a tack, but we made it in the end. An extra hazard was a floating pipe-layer laying a 24in. pipe

across 'Dredger's Reach.'

One sunny day all six of us rowed up to 'Castleton' for stores. We just touched the bottom as we reached the town, but a careful lookout in the bows enabled us to tie up dry shod below the weir. Although we had come up on the tide it was only a neap tide and we soon learnt of the wide differences between springs and neaps here (between twelve and sixteen feet) compared with the Medway, a mere three or four feet. A more unpleasant hazard was the raw sewage outfall about a mile below the town! Another family rowing expedition took us down past 'Chandler's Quay' and 'Witches Rock,' and up the 'Carew' to 'Carew Castle,' but we ran out of water and did not wait for the incoming tide so as to save a hard pull up from Chandlers.

One very good sail was down to 'Docktown' where we landed just below the new bridge which collapsed so tragically some years ago. We hauled the boat up the beach, tied the painter to a rock and walked over to 'Castlehaven.' This castle is open and in a remarkably good state of repair. The dungeon, a natural cave in the rock foundation, with its floor just above high water springs, is very impressive. Sailing back on the flood the wind died away as we approached 'Chandlers' so there was nothing for it, but to set the 'wooden tops'ls' again.

Another day we sailed up the eastern arm past 'Sly Castle,' as far up as 'Watergate Castle;' (there are by the way at least half a dozen castles on the estuary, but they are not all open to the public.) There we met an enormous shoal of whitebait coming down the river and from bank to bank the water was white with seagulls fishing. Elsewhere we watched bass drive whitebait into the shallows and saw the water boil as they snapped them up.

In the evenings we would sometimes go trolling for mackerel on the incoming tide, or take a couple of rods and fish for bass. Perhaps the times I enjoyed most were the early mornings, ghosting along single handed in the gentlest of breezes, by the edge of the mud flats, watching the waders feeding.

Between cruises we found time for days at the beach without the boat, and went for walks along the coast path. One trip combined a pony trek for the girls with a visit to the Prescelly mountains to collect spotted

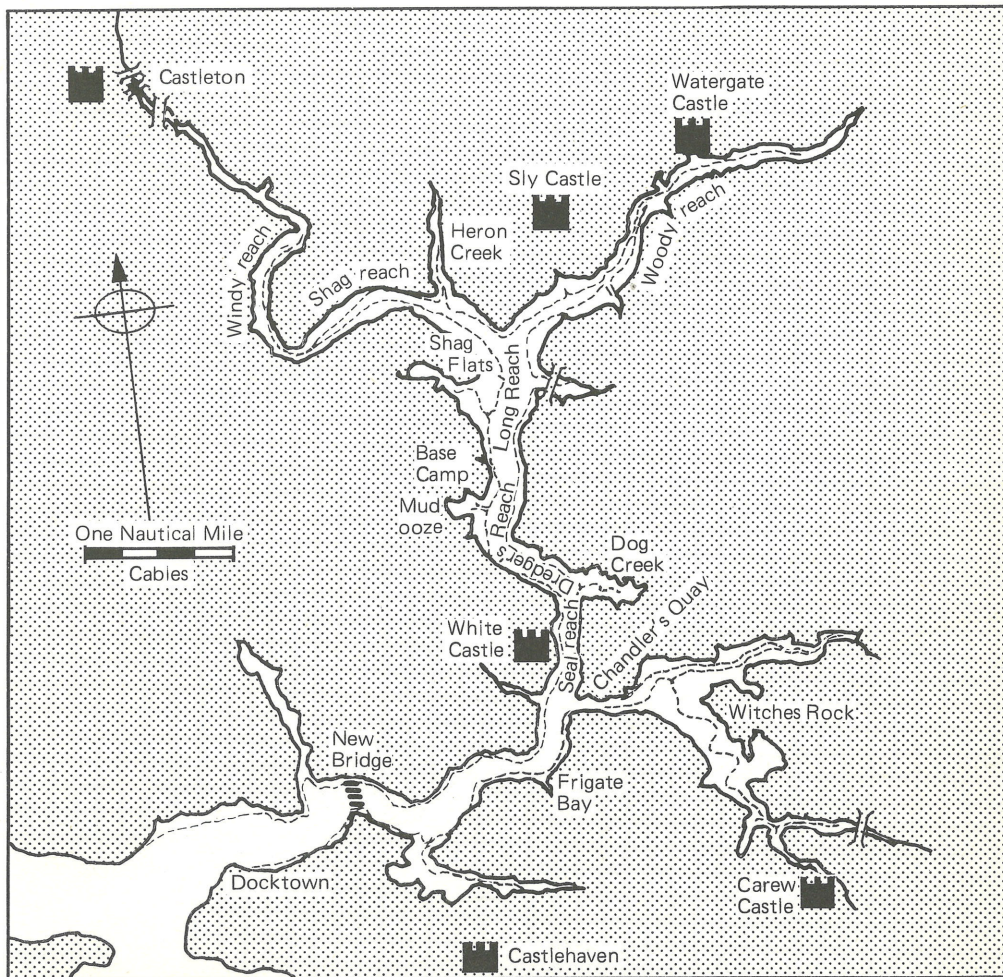




dolomite, so that we could make our own Stonehenge.

One day at Marloes a very unofficial looking notice declared that a suspected unexploded mine had been found and warned people to keep away from a large part of the beach. We took this as a practical joke until the next day when a Royal Navy helicopter arrived, dropped two bomb disposal men, and cleared off while they exposed what turned out to be just the top half of a real mine.

There are many small quays and harbours still left to explore and next year we will make some new landfalls, fill in some more gaps on the chart and even perhaps sail right down to Dale, where I understand





there is a strong Mirror fleet. This, however, will be a major expedition needing some land based support, for we shall not get there and back in one day.

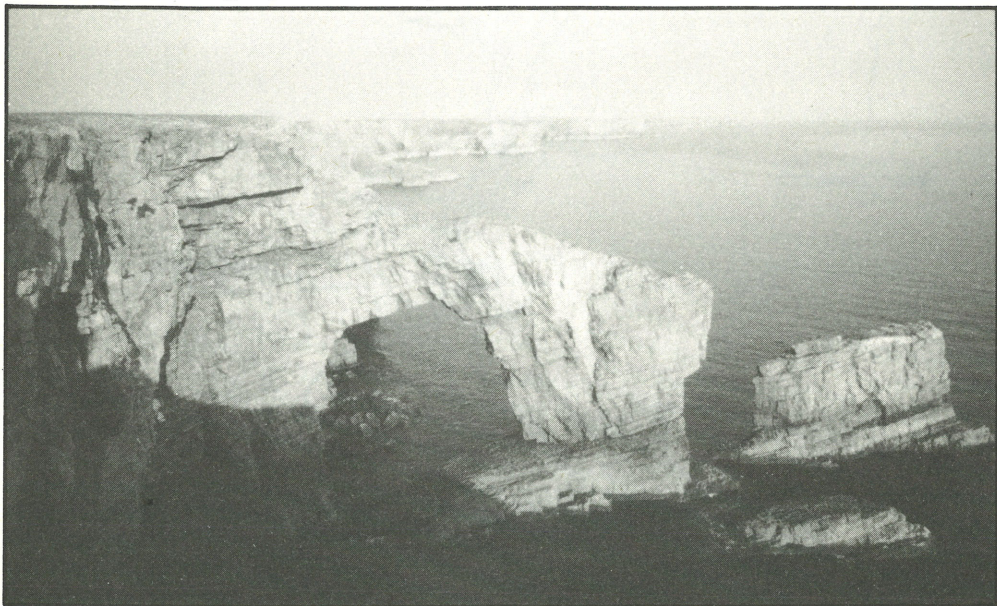
One word of advice to newcomers; buy a set of local tide tables and work your tides, You will take a long time to get back if you don't.

## SEQUEL

It was actually two years before we returned to Black Tar Point and everything was still the same, except us (clearly no-one had read my piece). The children were all bigger and we had exchanged our Mirror for a Pacer. We did explore lots more creaks and harbours with the bigger boat, the natural successor to the Mirror, and we did sail down to Dale on the lowest ebb tide for 100 years. This was an interesting 17 mile voyage.

Starting at 0630 hours in gentle mists, we drifted down stream on the first of the ebb, past 'Dog Creek,' 'White Castle,' 'Chandler's Quay,' past Jenkins Point, Whalecombe, past the warships in moth balls, past the towing targets in Millbay, and then things began to get interesting. A gentle breeze sprang up and as we passed Cosheston Point we felt the tide begin to get a grip of our keel. At 0800 hours we were being swept under the nearly completed Neyland Bridge by a 8 knot tide, with

just enough breeze to give us steerage way. Deep whirlpools would form by the piers of the bridge and sweep downstream alongside us. James and I had no idea what would happen if we got caught in one, so we didn't. The estuary broadened, the whirlpools flattened out, but the tide bore us steadily westward. We just cleared the ferry quay closehauled and collected some advice from the shore to the effect that we would never get back. Then, off Milford Haven, the breeze settled down to a steady NNW force 3 and, still closehauled, we passed rows of enormous tankers moored at jetties on either shore. We hugged the south shore to get the best of the wind, and across the mouth of Angle Bay, it freshened to a force 4, enabling us to sit out and sing our heads off. With Stack Rock well abeam, we flipped over to port (after 7 miles closehauled on starboard!) and made for South Hook Point on the north shore, taking a good look at the Martello Tower on the Rock as we passed. Back on to starboard, as Great Castle Head came abeam behind us and we fetched Dale Beach in one more board at 1045 hours. Here we were met by the rest of the family and spent a happy day prawning on parts of the seabed that are never normally exposed, and catching several octopuses. The voyage was complete when we met our old M25094 on the water.





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# The Mahogany Tiller

by Ginger Moore

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"Man's inhumanity to man makes countless thousands mourn." So said Burns. And so say I.

Sudden and swift, unexpected values can leap out on us, not as an ordinary hazard in the fabric of our everyday life, but like a wildcat from the heather on an unwary approach to its litter.

Just such an incident was that of the Mahogany Tiller. Out of the blue, a thunderbolt, out of sea, a kraken.

In September, as usual, our happy band of sailor fishermen had assembled in the far north west of Scotland. Water in the river was sadly lacking so salmon and sea-trout were off the menu, and besides that, there was no wind for our Mirror and Albacore. Thus, driven to sea by the deadly fish-protein deficiency we call in the outboards to our assistance.

Amongst our assorted fishing gear we have a fifty fathom, fifty hook, bottom line. By professional standards a laughable instrument, but one which we found to be deadly, at least against dogfish.

Thus with buoy ropes, straylines and baited hooks carefully laid out in the container so that the fishing line could be shot without hitch or snarl, we set off. On arrival at the centre of the bay we prepared to shoot the line and found the first required item missing. No signs of our two marker buoys. Close by, when appealed to, the Albacore gave us a dusty answer. No. No buoys.

Incautiously, and insultingly, the Albacore came close alongside to see for themselves. As though we might overlook the presence of two petrol cans in a Mirror! — Must have been left on the beach.

Now 'Doc,' whose Albacore it was, had recently acquired a new tiller. It was lying in the stern sheets. There it was with rich mahogany glowing behind three coats of best varnish, too long and too stout in my estimation for an Albacore, but a very fine

marker buoy in a flat calm. Very grudgingly Doc handed it across and sped off, probably in case I asked for more of his fittings.

The buoyrope and first strayline were attached to the sinker, a very heavy piece of steel we had found in the barn next to our cottage. Then the sinker was lowered into the depths by the buoyrope. The latter was made of codline so that lowering the weight was a matter of some difficulty due to the heaviness of the sinker and the thinness of the line. As the sinker went down the strayline was payed out. At fifteen fathoms the sinker came to rest with only a fathom or so of the buoyrope to spare and not much more on the strayline. Then we bent on the fishing line to the strayline and going ahead at a highly efficient speed, shot our fifty hooks without a hitch. On went the second strayline, on went the sinker, a touch ahead to stretch the bottom line well taut and over with the second sinker. And that was that.

We joined the Albacore in a search for mackerel but they proved quite unco-operative. We towed our flies in wide sweeps across the bay but made no contact and could see no shoals breaking surface. Perhaps the seagulls had a laugh, certainly they never left the water except to get out of our way.

After a couple of hours with our productivity rating marked at zero we returned to our tiller buoy to discover what our bottom hooks had provided. A small impediment interrupted the programme at this point. Where was the tiller, where was the buoy?

Sitting right over the spot where the sinker went down we could see no trace of the marker. It had been laid at high water, so the level had dropped four or five feet and there was no appreciable tidal stream in the centre of the bay. The field of knots, bends and hitches had been included in our professional stamping ground, so an inadvertent 'cow hitch' could not explain the missing tiller. Where had it gone? Here indeed was a pretty kettle of no fish.

Doc is a person who appears to view errant behaviour with a benign calm and whose unruffled acceptance of the joke of inauspicious starts is that of the true stoic. Perhaps it was a planet in the shape of Mars which came into ascendency. As a retired naval Surgeon Captain he appeared to



forget the inflexible injunction of Queens Regulations and Admiralty Instructions that 'provocative language is forbidden' (blasphemous language is only 'to be discouraged').

The presumptive loss of his brand new tiller blew his normal code to the four winds. Here indeed was an unexpected value. 'Provocative' would be a flattery of the language that followed, and my faltering apologies were drowned and the bones picked clean.

However, there is more to life at sea than recrimination and the next item on the agenda was to try to recover the gear. The grapnel is the traditional implement for recovering lines from the sea bed and luckily I use a grapnel as an anchor for the Mirror.

In twenty minutes we had a bight of the fishing line on the surface and in half an hour the complete gear in the boat including the offending tiller. But no fish. No mackerel, nor haddock nor flatie blessed our supper table, where Doc still appeared to view me as Public Enemy No. 1.

A week passed before we were on reasonable terms and then Doc said that the reason for his behaviour was my lack of adequate apology. Apology? Further apology after that verbal onslaught! But I know better. It was the shock of the apparent loss of his beautiful new mahogany tiller that ailed him. That tiller was the apple of his eye and he valued it more than he cared to admit.

And the reason for the disappearing tiller? In retrospect, the answer seems clear enough and one we should have foreseen. The undue weight of the first sinker would have caused the codline to stretch almost to its limit and so, as the lay of the rope straightened out, the sinker would revolve twining the strayline around the codline all the way up from the depth below. As we have very little slack when bending on the tiller it is probable our first hook was suspended at mid depth and when we hauled the whole fishing line taut we pulled the tiller well under water and there it remained until the recovery operation.

Next time we shot the line we made no mistakes. We streamed the buoy (a decent one) away to leeward to its full scope, dropped sufficient coils of strayline clear for running into the water and then dropped our sinker over the side. Perfect. Except

perhaps for the catch: one flounder, twenty three dogfish. (Rock salmon to you Sassenachs).

Doc is now Commodore of a Club in South Wales. Some of you may recognise him, but if you approach him on this subject, do so with care.

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## A seamanlike rig – for a Mirror?

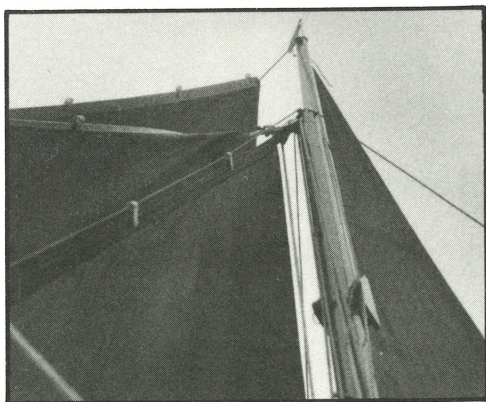
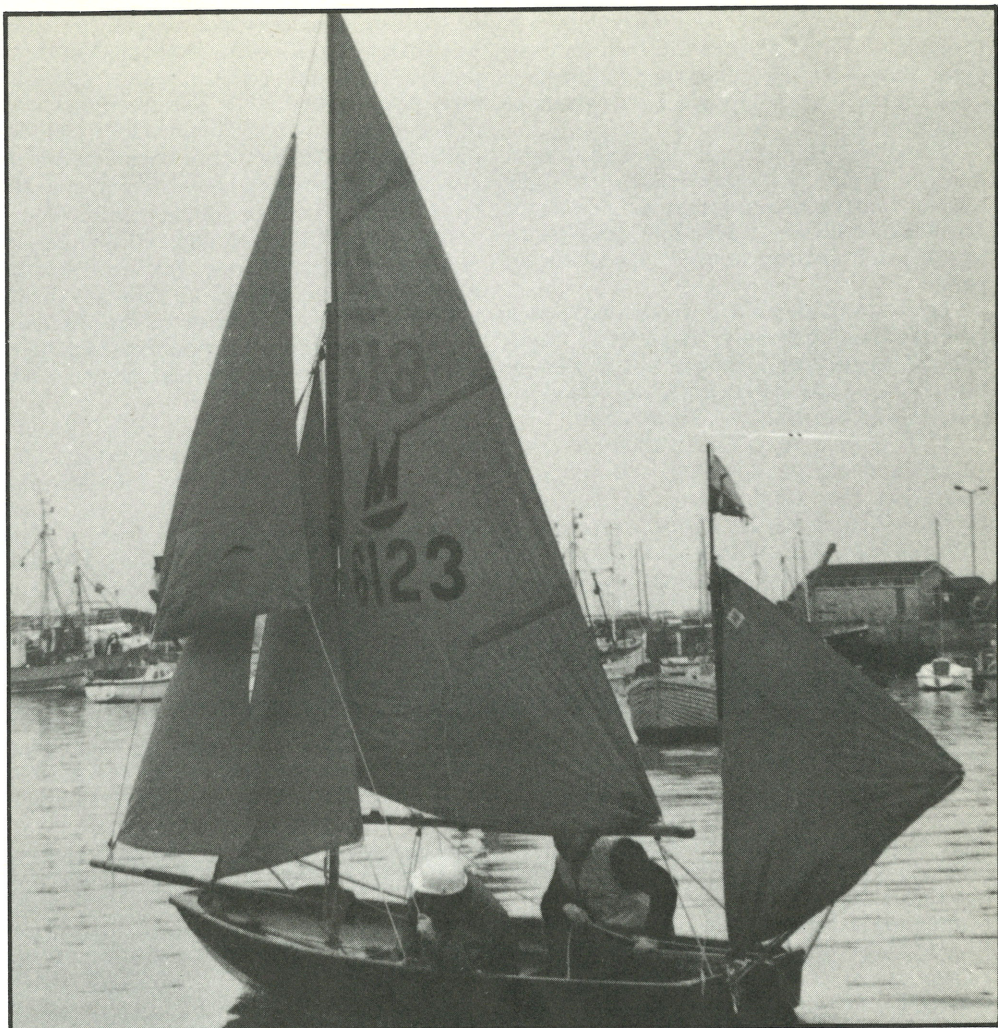
by Sally Karslacke

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It was just a quiet Saturday afternoon in Dun Laoghaire Harbour . . . end of the season scene. Keel boats being emptied and drawn up on slips. Last minute boy-scouts rowing trips. Dinghy enthusiasts enjoying the last cruise before winter session overhauling the boats in garages and back kitchens around Dublin . . . and Dalkey. Or getting in practice before the Frostbite series set in. A Mirror Dinghy cruising under full sail – (mainsail, flying jib, staysail, foresail and mizzen) – A 26 foot fibreglass keel boat ablaze from stem to stern. A rat loping along the wharf. A gentleman in full wedding regalia directing rescue operations – complete with carnation in his button hole. A normal end of season scene.

The Mirror Dinghy, owned by one Theo Harris, founder Chairman of the Irish Mirror Class Association, and rigged in completely seamanlike fashion by the Master and Norman Long (one time Chairman of the Irish Mirror Class Association) – A spare boom, clamped to the transom with a firm lashing to the skeg and stays passed through the drainage holes in the transom, was stepped as mizzen. The helmsman handled an upside down Mirror standard jib, lashed to a spinnaker pole boom, and sheeted through the drainage holes . . . A spare 'as supplied' paddle lashed to the mast and protruding over the 'sharp end' formed a bowsprit. Double blocks hauled to the mast head permitted the rigging of the normal foresail as well as a staysail attached on the bowsprit. A spare halyard from the peak of the gaff ensured adequate setting of the flying jib, midway between the gaff peak and the bowsprit . . . Mast





stepped forward allowed clearance for the normal mainsail, complete with boom.

The crew was kept pleasantly occupied with the flying jib sheet lead via a spinnaker eye well aft on the inner gunwale . . . the staysail sheets passed through the aft shroud blocks . . . and the foresail 'as plan.'

A superb sight . . . and only standard Mirror Dinghy gear used. The picture was completed with the addition of a large well-worn Dun Laoghaire Yacht Club burgee from the mizzen mast and the well-known white crash helmet on the head of the crew.

At this point a certain Class Secretary happened on the scene . . . not strictly



true . . . I had been an enthusiastic onlooker throughout the rigging of the boat and was even allowed to help at strategic moments – fetching the brew composed from waters of the Liffey.

Theo and Norman set sail and I took photos from all directions as they maneuvred. Slow and somewhat ponderous was their tacking – rapid their progress to leeward and impressive their speed on the wind.

They picked me up and we set out to tack from the Coal Harbour, through Hell's Gates, and off to desport ourselves in full view of the elite . . . the Royal Irish, the Royal St. George, and the National Yacht Clubs.

A sharp luff to allow clearance of that Dragon and 'she handles well, and sails fast' comments the Commodore of the Irish Cruising Club as we slip under his stern. We bow politely. Various other comments are received and treated on their merits. We can't always be polite.

Click – 'that is that film finished' sighs the passenger. We sailed to the public slip to put a member ashore in search of film – 'Fire!' 'Ship ablaze on the port beam' – rapid hardening on to the wind and we set off to investigate. There, in the mouth of the harbour, a keel boat bellows forth flames and black smoke. Fired from stern to stern, with flames shooting high into the sky to dissipate in thick black smog which curled upwards and lay out across the atmosphere, fouling the last fine day of the sailing season.

For those who have never seen a ship ablaze it is not a pleasant sight. But, inevitably, we were drawn towards her. The Life Boat, hoses gushing far out over the water, steamed towards the blazing vessel which a local boat contrived to tow inside the harbour. Placing herself between the watching fleet and the fire, the Life Boat awaited the explosion of the gas cylinders known to be on board. They went off – straight into the air – Lucky for some. Onlookers were suddenly treated to the sight of smoke belching from the masthead until the stays failed and the mast collapsed into the water. The conflagration racked the unhappy ship – superstructure all gone – she still rode high in the water, but flames were licking out around the transom.

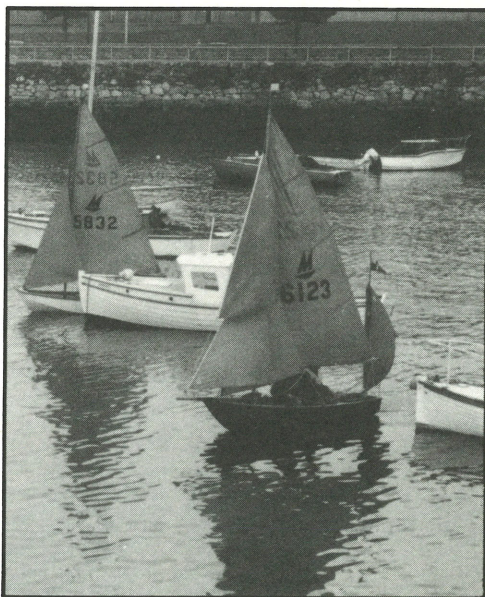
Under control at last and a gallant member

of the Life Boat crew put aboard, the vessel was towed into the Coal Harbour. Unable to proceed into the shallow water, the Life Boat passed the towing line to a boat load of boy scouts – nobly captained by a member of the regular Life Boat crew summoned from a wedding – white carnation gleaming in the lapel of his smart blue double breasted suit.

We followed at a discreet distance – returning to our mooring. Fires in fibreglass may be damped but before they are finally extinguished . . . a sheet of flames from the bowels of the wreck and only a pole to beat them out with in the hands of the salvage crew.

"We have a bucket" shouts Theo, "paddles out . . ." work for the Class Secretary. We came alongside and while the Life Boatman handled the bucket, Norman proved there were still other uses for the white crash helmet as he stood on the 'Full Rigged Mirror' and threw water into the filthy mess of soot, charred resin and melted fibreglass which had once sailed so proudly, and now looked like wet burnt toast.

Really out at last . . . but darkness approacheth and time to de-rig and find the families. It was whilst walking up the slipway that the rat passed across our bows. "Pity you couldn't have come in the summer" said the hosts. "There's a lot going on then."





# We don't have this trouble on our gravel pit

by Peter Thomas

The sky was blue, the streets were crowded, and the full size replica of the 'Golden Hind' had just sailed into Brixham under sagging sails and a surreptitious diesel engine. It's welcome had evaporated when some enthusiast on board had fired a one-gun salute. Every startled seagull in Torbay had taken off with a shriek and let fly. We stood there, a small bespattered group on the breakwater slipway, in a town of similarly christened tourists. Typically, in otherwise perfect conditions, it had come down into a flat calm. "It was different here last year" someone said. It was too.

Then the sky had been slate grey, the sea-gulls were all grounded, and we had the place almost to ourselves. The wind had got up awkwardly between an exciting blow, and the state where you can decline to venture forth without fear of ridicule. A local expert had materialised unasked, and was telling us how safe Torbay really was. It appeared that he actually knew a bloke who was directly related to the coxswain of the life-boat, which of course was comforting. What is more to the point we had already paid 30p launch fee.

"What would Drake have done?" I mused out loud. "Who's he play for?" enquired my eldest with sudden interest. (Parenthood is vastly overrated.) "I'll come with you" said Brian, out of the blue. Come with me! I was still assessing my survival chances. "I'll take some photos" said Barbara, grabbing the eldest, and setting off down the long breakwater. The matter in some mysterious means seemed to have been settled.

The Mirror was bouncing on the slipway with a hollow banging noise. I recalled all those diagrams in books showing smiling individuals up to their 'Y'-fronts in the drink holding craft off, no-one seemed to be doing that. It probably explains why it's always diagrams, never pictures, that you

see of this manoeuvre. The boat seemed more eager than us to be off, we had no sooner started pulling our various bits of string, than it leapt onto the plane and bombed off down the harbour. We passed a startled Barbara on a screaming beam reach, smiling weakly. The sea looking rougher with every foot, we shot toward the harbour mouth. Before I had mentally prepared for it, we were in it in more ways than one.

The boat surfed clean off the crest of one wave and landed in the trough beyond, with a crash that shook my fillings. The mast shook, and inexplicably Brian was standing up. I stared at him, what the hell was he doing? He looked as surprised as me and made a conscious effort to sit down. Helpfully the boat made a determined effort to come up with the next wave. Brian and the boat reconnected firmly. I swear a tear came to his eye, but it might have been just spray. At this rate we would make Cherbourg by tea time unless we could get the thing turned round. Straight ahead a dead steady trawler was making for the harbour. "I'll tack in the lee of that, I yelled. We closed the trawler rapidly, someone on board, clearly not relishing the idea of being rammed by 125lbs of ferocious plywood, blew the hooter hopefully. "You've got him worried!" shouted Brian happily.

I can't claim we put in a tack to be proud of, but it sufficed, and Barbara reached the end of the breakwater just in time to see us surge back into the harbour. "You're back then?" said the local, unnecessarily. I turned to answer and fell over my own trailer. But that was last year, this year we gave it up as a bad job, and went over to Dartmouth.

In Dartmouth it was different. The sky was blue, the streets were crowded, the Golden Hind had yet to show up, and the seagulls were observing a cease-fire. The Flying Scotsman was deluged under happy photographing train lovers, Brian among them, and a breath of air was coming up the estuary. We slipped the Mirrors into the Dart and by the time we had reached mid-river, it came down into the calm again. We settled comfortably, Joyce the missus, searching aimlessly for sun-tan oil in the stowage compartments. She was rewarded by a pair of forgotten smelly plimsols in one side,



and a broken shackle in the other. We searched lazily for the 'Charlotte Rhodes' moored downstream. What had this Onedin bloke got anyway? I should grow bushy side-boards? Perhaps I should replace what's fallen out on top first. I gave up squinting against the sun on the water, I really should have worn my glasses, but being given to extravagant gestures, and what with the high cost of dredging, sailing is dear enough without replacing any more pairs of specs.

Time passed without effort by anyone, this was more like it, away from the crowds. A klaxony sound punctured the calm, a large blurred shape had appeared. "What's that?" I asked Joyce, "Over there." "It's a ship" she announced brightly "Coming towards us with two anchor chains. Power gives way to sail" she added. How could it come towards us with two anchors down I wondered, unless . . . "It's the bloody chain ferry!" I shouted, "That can't give way to anything! We've drifted down onto it!"

I tore at the aero-elastics lashing down the oars. "It's not like you to panic" said Joyce. The thing was coming into focus now, the loading ramp just slicing the tops off the ripples. I began to row for all I was worth, the other Mirror watched helpless 100 feet upstream. The side of the ferry appeared beside us, the paddle wheels not 8 feet away. I redoubled my efforts to counter the suction of it's hull. "Hey" said Joyce "There's someone taking our picture!" I looked up, a sadist stood at the rail panning over the gruesome scene. Charming! As we swept around the stern of the ferry, I ripped the board up just as we passed over the cables on their way down into the river bed.

"Oh my God!" said Joyce suddenly losing her cool, and clutching her Tee shirt where she thinks her heart might be, "Oh my God." "It's too late for that now" I said, "far too late." And it was.

Next holiday we're trying Falmouth. I understand there is no breakwater, no chain ferries, the Golden Hind will be elsewhere, and the seagulls all fly upside down. The sky being blue, and the streets being crowded we can put up with.

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## Cruise around Fife

by Russell Gordon, Jock Blair and Nick Lindsay

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Take a Peninsula like the Kingdom of Fife, its main arteries, the old railway bridges, and their modern partners, the road bridges, add some sailing dinghy enthusiasts, three Mirror kits. Allow time for fermentation and you can be sure some scheme will come out of it to prove what these little craft can do. Sure enough the creators of '52 and '55 thought of it, why not circumnavigate Fife, if possible taking in all four bridges in one weekend!

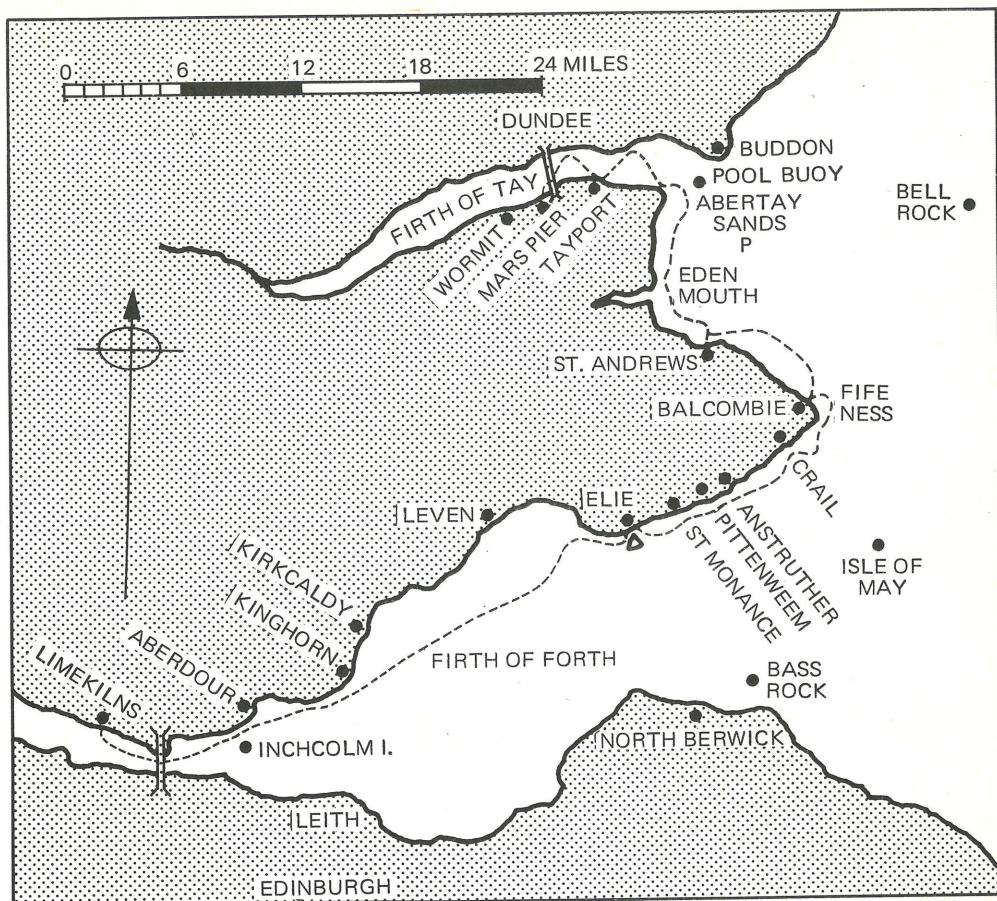
If possible — that was the key, so '52 and '55 got to work, checking tides, approximate mileages, etc., and found it was possible on one weekend during the summer, tides would be right — as always, however, the only unknown factor was the weather, the most important factor of all!

The first attempt was made in June '73 and ended with the two partners screaming into Lower Largo in the teeth of a force 7 gale, to be towed back to Wormit Boating Club by trailer, even more determined to try again. One lesson was learned, however, that two in one boat, plus gear, was too much.

1974 and '52 and '55 are again plotting this year's attempt. Organisation is more or less complete, and they are discussing the possibility of sailing single handed, in the local, when joined by '76, who has done 90% of his Mirror sailing single handed in most weathers, and confirms their own experience that the Mirror is an easy and pleasant craft to handle solo. So it is settled Mirrors will go solo, but three this year, and it's all go on the 7th, weather providing.

17.00 hrs. 7th June and Mirrors are being rigged at Limekilns on the Forth. The lucky mascots — a West Highland Terrier and a Scottie, procured from bottles of Black and White whisky, were attached to the masthead of M12476, but the force 3 to 4 wind diminishing, was in fact, force 5. Everything was now at stake, a squall was coming up and the wind increasing steadily. To go or not to go, that is the question, a member of the local sailing club advised us to cross



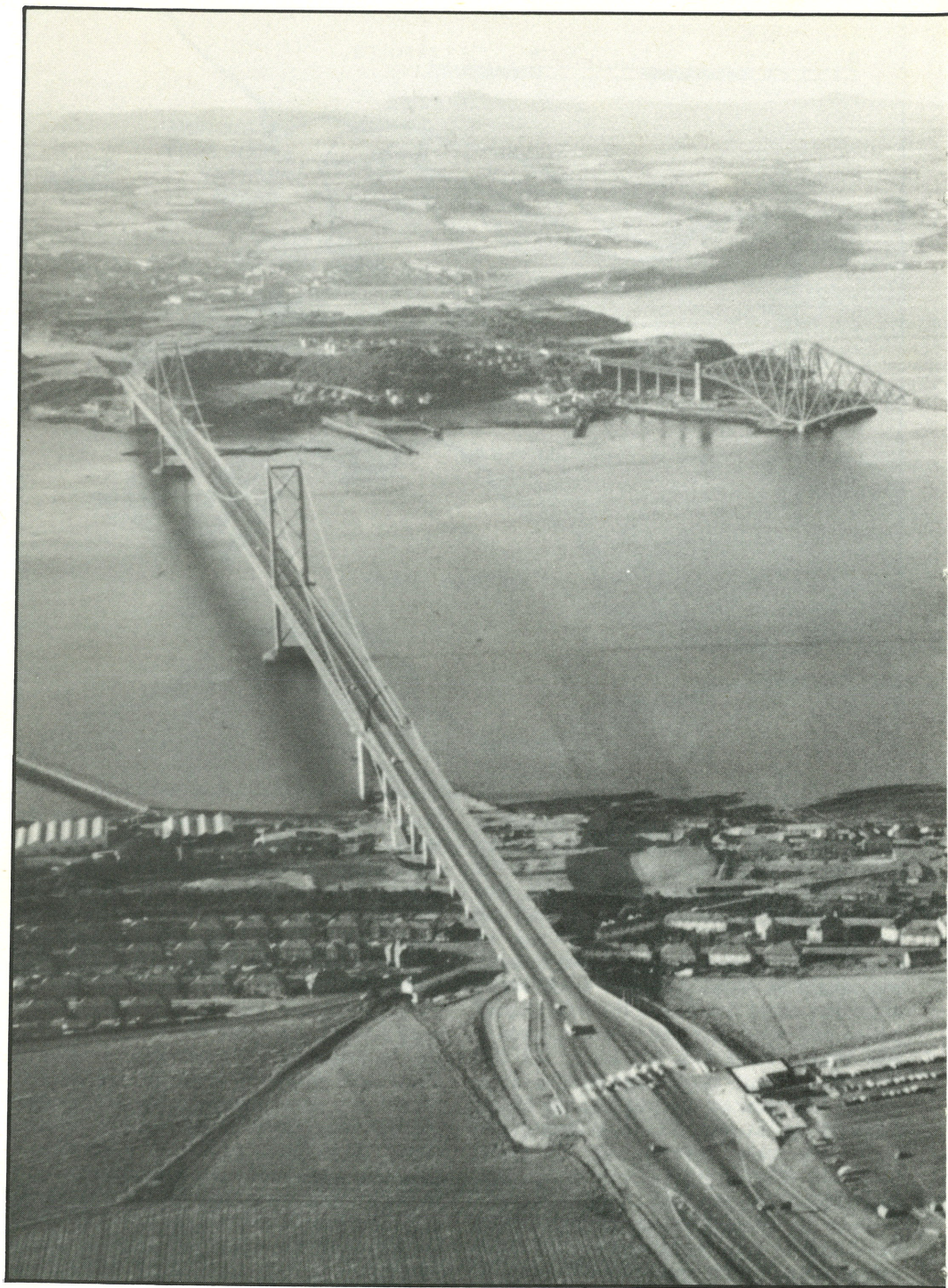


the harbour on oars, from beach to end of quay, and hoist sails there, making a dash from the end of the quay past the end of the reef running out beyond the quay end. Due to force of wind, mainsails were stowed, and wet suits donned at 18.00 hrs., '55 and '52 rowed across to quay wall, '76 last to leave was caught in squall and after considerable difficulty, made the end of the quay. Squall passed and wind dropped to about force 5. Jibs were hoisted and left loose, '55 was first off, and with short sharp strokes of the oars he was clear of the reef into the Forth, followed by '52 and '76. Once clear of the reef, oars were stowed and jib sheets tightened. Mirrors pushed forward slapping into waves as the wind bit.

Once far enough out to be clear of the Naval Base at Rosyth, Mirrors started to run before wind, which gradually fell away to

force 3, allowing helmsmen to relax on the bottom of the boats, feet up on thwarts, a comfortable position not possible with crew aboard. This position was rudely disturbed as Mirrors passed first milestone, the Forth Road Bridge, at 19.55 hrs, by the wake of a container ship ploughing along with full cargo. Coming to second milestone the railway bridge, it was decided to land below it at a small slip below the North Pier, and rig the mainsails. This was done, landing at 20.05 and departing at 20.15 hrs. Mirrors set off at a good pace, running before wind through Mortimers Deep, past Inchcolm Abbey 21.00 hrs., Aberdour Sailing Club, Pettycur, Black Rock 21.30, Kinghorn 21.50 hrs. At this point the wind was brisk, probably force 4, and Mirrors had their skirts up, going like the wind. It was decided at a rendezvous to carry on to Elie, '76 knowing











Elie harbour had no qualms on entering at night. (Actually the pubs were shut so there was no point in going ashore at Kinghorn as planned.)

Mirrors set off in line abreast, planing along, each taking it in turn to surge ahead of the others, on the wave crests. Easily the most memorable part of the trip, the Mirrors resembled a school of porpoises frolicking in a ship's bowwave, now heading towards Sauchar Point Light at Elie. Kirkaldy, Dysart, West and East Wemyss fall astern rapidly, but coming up to Leven it was noticed that one landmark was staying in place, meaning, despite speed through water, speed over ground had ceased. It was now after midnight and it was decided to head for Lower Largo. Trio started sloping into shore, soon all were behind Ruddons Point, and speed over ground increased sufficiently to encourage everyone to try again for Elie. By 01.00 hrs. on the 8th all were sufficiently round Kincaig to pick up May Island Light ahead, and Findra

Light on the starboard beam. Sauchar Light flashing behind Chapel Ness made it appear at first like a reef running out from the headland and there were some anxious moments peering through the rain squall (no radar) which had enveloped the boats as we approached the headland, till it cleared and the silhouette of the buildings on Chapel Ness could be seen.

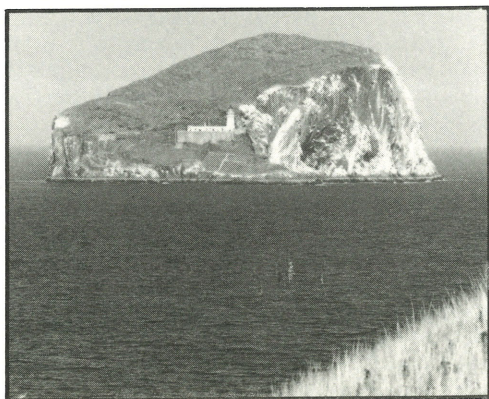
Fortunately at this time of the year with clear nights, daylight never really leaves the skies, and we were able to distinguish rocks which though clear of the course, gave comfort that we were able to see them.

Clear of Chapel Ness and its reefs, '52 and '76 lined up on the last light (Eastmost) on the road skirting the harbour. This took them well to port of the old building on the harbour wall, the quay stretches well into the harbour from this building. So much concentration was spent on this by '52 and '76 that they did not notice at first that '55 had fallen behind. Signals were





immediately flashed back to guide the wanderer in, but these were unfortunately missed! A lesson here, no use always signalling with a mass of lights behind you, shine the light up the sail, more chance of the tired eyes seeing you. M'55 continued to head for the beach at the west end of the town. In the lights from the street it looked a lovely beach to land on but at the state of the tide we were making, landfall was in fact guarded by rocks resembling the dragon's teeth of the Siegfried Line. Fortunately '55's ears picked up the sound of water gently lapping on something other than sand, and he veered away in time, eventually beaching in proper place twenty minutes after '52 and '76 who beached at 02.00 hrs. 8/6/74. By 02.30 hrs. all boats had been lifted above high water mark and after a hot drink and a bite to eat, trio cocooned themselves in boat-covers and groundsheet, on the grass at the edge of the harbour, and tried to snatch a few hours sleep.



05.30 in the morning saw all helmsmen awake, after a fitful 2½ hours sleep, hot soup by courtesy of '55, plus the brilliant morning sunshine chased the chill from the bones and sent the blood surging through aching limbs. (Mother Earth makes a hard mattress). Mirrors crept out of Elie on the gentlest of zephyrs after listening to the 06.30 hrs. weather forecast, force 3 westerly for our area. As we drifted on the tide we wished it was force 3. Once the trio had drifted past Sauchar Point it was feet up on the transom and a gentle 40 winks in the warm sunshine waiting for the breeze.

Boats drifted past Newark Castle, St. Monance, the salt can, Path Head, till off Pittenweem Pool a southerly breeze sprang up and boats started sailing again. '76 who had relatives in Pittenweem, gave three blasts on air horn, but town remained sleepy looking, with no movement visible, at 08.30 hrs. 09.00 hrs. wind changed to easterly off Anstruther and Mirrors started tacking to Crail. It was a temptation to take in the May Island in one big tack, but this was resisted and Crail was abeam by 10.30 hrs. Leaving Crail and a boatful of sea anglers pulling in cod and pollock it looked as if Fifeness would be reached in minutes, but wind died and again it was a drifting match, this time in heavy rain, till off Fifeness at noon sun returned with gentle breeze, sufficient to counteract the tide, now turning, and boats in line astern glided through the crystal clear water, '52 leading, followed by '55 and '76, helmsmen standing upright, peering down at the panorama of rocks, red waur tangles and sand slipping past beneath the keel as a course was threaded between the reefs, till finally with rising breeze, the three boats skated onto Balcomie beach, beneath a very active golf course, and had a blow, lunch and liquid refreshment.

Yet another rain squall hastened the launching of the boats and beach was cleared at 13.00 hrs., after a stay of 45 minutes. '52 again took the lead, followed by '55 and '76, all threading their way through the Tullybothy Craigs without accident, though '55 and '52 had to take sudden avoiding action to clear rocks just below the surface. Once clear of the Craigs, boats moved along in a gentle breeze towards Babbet Ness, sun



once more making helmsmen drowsy. Rounding Babbet Ness the wind rose in strength and life once again surged through the Mirrors and the crews as they climbed back onto the gunwales and began to sail properly.

The wind was especially welcome to '76, the old lady of the trio. The original privately owned Mirror in the Wormit Boating Club, she had suffered the indignity of having been left out in the open for a year and denied a much needed paint strip, and overhaul, due to circumstances beyond the control of the owner, with the result that she was heavy and sluggish in light winds. The two youngsters of the trio skipping well ahead of her in light breezes, however, in the stronger winds she picked up her skirts and chased after the youngsters so that the last miles to St. Andrews were completed line abreast, boats surging onto beach by club launching slip within seconds of each other at 15.45 hrs.

Boats were covered up, and helmsmen set off for some liquid refreshment and a meal. Passing the St. Andrew's Sailing Club, an official invited the trio to use the club facilities, showers, and bar, an offer which under normal circumstances would have been gladly accepted, but time was limited, and the very kind offer had to be declined with thanks. After a quick glass of beer at the local, following the host's advice, a chip shop was located at the far end of a park. '76 purchased a fish supper and strolled out into the sunshine, leaving '55 and '52 to await the cooking of their more exotic fare, chopped steak. '76 having finished his fare, lay down on a grassy bank in the sunshine, clutching his chip bag (no litter bins) and was soon in the arms of Morpheus. '55 and '52 joined '76 in Morpheus's arms after finishing their luxury fare. Now what the people of St. Andrews thought when walking through the park on that hot summer's evening, they came across three figures clad in wetsuits (almost a mile from the sea) sound asleep clutching chip bags, one of whom was making a fair imitation of the local saw mills, can only be left to the imagination. The ripsaws eventually brought '76 back to the surface, noting time was 19.00 hrs., roused others, and three weary figures made their way back to the boats, '55 dutifully depositing the chip bags in a 22 carat gold litterbin

finally located on way back to beach.

Boats hit the water at 19.30 hrs. and soon Mirrors were skimming over water to Tentsmuir. Wind dropped slightly and '76 again dragged her heels, '55 and '52 taking proper course, arrived off Eden point at 20.05 hrs. '76 said a prayer that tide would not drop too quickly, and wind would stay, and took direct course over sand banks to pool. Fortune was with him as wind freshened slightly, and he just made it, threading his way between white capped wavelets indicating top of banks, with inches under keel, slid over sand banks joining others in pool.

Mirrors were greatly assisted in following channel out of pool by buoys set by Tay research, and they almost had it made out of pool when wind dropped, '55 and '52 immediately swung onto the beach, '76 in the middle of the tide rip, about eight feet from smooth water, was in difficulty. Seeing only a few inches of water under keel he promptly jumped over side straight into a hole. Finding himself unable to touch bottom he clambered back into the boat and rowed ashore between '55 and '52 where a gust of wind blew the boat over, utter disaster being averted by prompt action of '52 in grabbing gunwale of '76. Sails were lowered and last few yards out of pool were waded, boats being pulled above waterline by 22.15 hrs. 23.00 hrs. saw helmsmen in cocoons in lee of boats. Sand, however, proved an uncomfortable mattress, and sleep was pretty fitful till strong wind had helmsmen up and about at 02.00 hrs. on the 9th.

Wind was all of force 5 gusting approximately 7 from the west, meaning a beat upriver. It was decided that despite bright moonlight and partial daylight, it was safer to await daylight before setting off, as it was essential that all members of party should be able to see each other clearly, in such conditions, in case of capsizing.

Mirrors took to water at 03.15 hrs. after a breakfast of hot soup, cooked in kettle, concentrate being diluted with milk, that and beer being the only two liquids available, apart from salt water. In trying to estimate wind speed, party had been led astray by the fact that water did not seem very rough. Once afloat the reason became apparent, the river was covered in a huge oil slick, diesel or gas oil by the smell.



The sail upriver was hairy, but most enjoyable, sailing at its best, rigging and daggerboards singing. Tayport abeam at 03.45 hrs. Tay Road Bridge passed 04.25 hrs. and here the wind direction shifted, causing Mirrors to tack much more often. Strength also increased, making it foolhardy to attempt the railway bridge at this stage, so Mirrors landed at Woodhaven at 05.00 hrs. After a celebration toast, helmsmen made weary way home. Their wetsuits, worn steadily for 36 hours, were cast into backyards to 'pong' to the elements, and after a hot bath, helmsmen crawled gratefully between the

sheets.

The final objective of the expedition was achieved when railway bridge over Tay was passed at 16.00 hrs. on the 9th in brilliant sunshine and gentle breeze, final landfall at Woodhaven at 18.00 hrs.

In conclusion, all who took part in the expedition had not only an enjoyable sail, but felt they had achieved something, not just circumnavigating Fife, but proving that Mirrors are not just toys for boys, but used sensibly, are sturdy craft, that can take owners a lot further afield than across the local pond.

|                  |                        |
|------------------|------------------------|
| Helmsmen: M17552 | Jock Blair, W.B.C.     |
| M38955           | Nick Lindsay, W.B.C.   |
| M12476           | Russell Gordon, W.B.C. |

#### Log Extracts:

7/6/74

|            |                                               |                    |
|------------|-----------------------------------------------|--------------------|
| 19.00 hrs. | Depart Limekilns, jib only                    | Force 5-8 Westerly |
| 19.55 hrs. | Forth Road Bridge, jib only                   | Force 3            |
| 20.05 hrs. | Ashore under North Pier, Forth Railway Bridge |                    |
| 20.15 hrs. | Departed Railway Bridge, full sail            | Force 3            |
| 21.00 hrs. | Inchcolm Abbey                                | Force 3            |
| 21.30 hrs. | Black Rock                                    |                    |
| 21.50 hrs. | Kinghorn                                      | Force 4-5          |

8/6/74

|            |                                    |                      |
|------------|------------------------------------|----------------------|
| 01.00 hrs. | Ruddons Point                      | Force 2-3            |
| 01.30 hrs. | Chappel Ness                       | Force 2              |
| 02.00 hrs. | Ashore Elie                        |                      |
| 06.30 hrs. | Depart Elie                        | Force 1              |
| 08.00 hrs. | St. Monance                        | Force 1-2            |
| 08.30 hrs. | Pittenweem                         | Force 3 Southerly    |
| 09.00 hrs. | Anstruther                         | Force 3 Easterly     |
| 10.30 hrs. | Crail                              | Force 3 Easterly     |
| 12.00 hrs. | Fifeness                           | Force 1              |
| 12.15 hrs. | Landed Balcomie Beach              |                      |
| 13.00 hrs. | Departed                           | Force 2 South West   |
| 15.45 hrs. | Landed St. Andrews                 | Force 3-4 South West |
| 19.30 hrs. | Departed                           | Force 3 South West   |
| 20.05 hrs. | Off Eden Point                     | Force 2-3 South West |
| 22.15 hrs. | Ashore Tentsmuir at exit from Pool |                      |

9/6/74

|            |                         |                    |
|------------|-------------------------|--------------------|
| 02.00 hrs. | Awake brewing up        | Force 5-7 Westerly |
| 03.15 hrs. | Departed Pool           | Force 5-7 Westerly |
| 03.45 hrs. | Tayport                 | Force 5-7 Westerly |
| 04.25 hrs. | Tay Road Bridge         | Force 5-7 Westerly |
| 05.00 hrs. | Woodhaven               | Force 6 Westerly   |
| 15.00 hrs. | Depart Woodhaven        | Force 2 Easterly   |
| 16.00 hrs. | Pass Tay Road Bridge    | Force 2 Easterly   |
| 18.00 hrs. | Land Woodhaven (W.B.C.) | Force 1 Easterly   |











# The Boy

by John Hayward

The year is 1949. A Royal Naval Frigate named 'Alert' is slicing through the seas off Malacca.

At the wheel of 'Alert' is a 17 year old Boy Seaman, watching the Gyro compass and reacting to it's movements with deft, practiced hands. The Boy has been trained at H.M.S. Ganges. He is justly proud of the fact and loves putting his training into practice.

As he steers the 1,700 ton warship on her course, the Boy thinks of the day when he will be Skipper. He will model himself on his hero; Lord Nelson! England will indeed have another Naval hero!

"BOY!" The First Lieutenant's voice rasps into the Boy's brain, bringing him from his daydream. "BOY, as an ex-Ganges Boy you must be able to SAIL a boat. Go to the boat deck and help load the whaler with supplies, you know what's required."

The Boy hands over the helm-watch to his 'relief' and hurries to the starboard whaler where he finds four other men beginning to load the boat with food.

A Naval whaler is a beast! It has two 'sharp' ends, a mains'l, a fores'l and a mizzen. The Boy has never really mastered the thing but honour is at stake now.

The plan is to sail from a point off Malacca to Malaya. The crew consists of the First Lieutenant, the Buffer (Chief Bosun's Mate), a Sub-Inspector of the Singapore Police, an Able Seaman and finally, the Boy.

Thus it is with so distinguished a crew, the Boy steps aboard the whaler, grabs the tiller with both hands (it is too fat for his small fist) and casts off from 'Alert.'

As the Frigate disappears over the horizon, the Boy feels lonely despite the presence of his crew. It is as if his home, his safe stable home, is going forever. Soon they are quite alone. Just four men, one Boy and a boat, alone in the enormous expanse of terrifying sea. A sea that is to teach them that she is ALWAYS Mistress and men sail upon her at HER pleasure. The Boy is about to become

a man.

The morning starts off fairly quiet. A 'comfortable' wind, small seas and cheerful chatter amongst the crew.

The Policeman gives a superb demonstration of small arms skill. He throws empty water cans up in the air and shoots holes in them with the revolver! The cans are about the size of small beer cans — he's good! Each of the crew in turn tries their luck at playing 'Billy the Kid' with some small measure of success. When the Boy's turn comes, he can't keep the heavy revolver steady. Everyone dives for cover as he blasts away — MISSED!

A change of course is indicated. The Boy must now give his superiors some orders.

"Stand by to ware!" he roars.

"Aft fore — check Main!"

The fores'l is hauled aft-wards whilst the mains'l is slackened. He pulls the tiller up and as the boat comes round — "Brail up!" The mains'l 'folds up,' the boat is round now.

"Ease fores'l — adjust main!" he calls. They settle on to their new course with all sails filled, including the mizzen which is set and controlled by the helmsman.

Time for lunch! Sandwiches, biscuits, cake and — water? As they eat, someone remarks that the wind seems to be rising. Come to that, the waves look a little higher.

"Rubbish" says the First Lieutenant.

"Anyway, the sun's still out and shining bright" says the Buffer unnecessarily.

"Streuth! What the hell is that!"

A cry from the bow causes heads to turn in that direction.

A Manta Ray! A beautiful Ray flies across their bow before dropping back into the sea. "It can't believe its eyes, here it comes again!" The beautiful and graceful creature glides near the surface for a last look at the man things before returning to the depths of his domain.

Mid-afternoon. The wind is getting up. For safety sake the Boy dispenses with the mizzen. No-one knows why but who argues with the Skipper!

"Sharks!"

"Oh Lord, so there are!"

"What do we do now?" Why is everyone looking at the Boy?



The Policeman acts. Before anyone can stop him he draws his revolver and fires — twice. The sea turns a reddish brown. Then — white foam as shark turns on shark, incensed by the smell of blood.

“You idiotic fool!” shouts the Buffer. “You’ll have the bloody lot round here now!”

The sea is kicked up by threshing sharks as the boat makes it’s escape, but they have not reckoned with the sea herself.

Anger — no — Fury at the murder of one of her own, the sea fights back at those who violate her.

The sky darkens, the wind screams abuse at them and the sea lashes out in unfettered fury. The mains’l parts and collapses before they have time to get it down safely, whilst the boat itself takes on board an unhealthy amount of water. Only the fores’l stays up.

The Boy can no longer handle the tiller so the First Lieutenant takes over. The sea is now terrifying; the wind relentless. They have killed, now for the repayment. For the rest of the afternoon and well into the evening the battle for life continues. They are cold, sick and so very tired, yet the Officer appears unaffected as he steadily keeps control of boat and men. The Boy’s admiration for Officers shoots to an all time high! There beside him stands a man like Nelson himself.

At last! At long last, the sea relents and the wind abates, both quietening to mourn. By some miracle they have survived. By an even greater miracle, unexplained to this day, they are in sight of land. The beach will be most welcome!

On shore now. Everyone lays on the beach resting aching limbs, removing salt water from mouths and stomachs.

The First Lieutenant (always the Officer) orders a great fire to be built. This will act as a beacon, as this part of the Island is uninhabited. Their ship will be carrying out a search.

The flames leap upwards towards the black tropical night as tired sailors rest bruised bodies and eat fruit collected on an earlier forage. The boy keeps a seaward watch for his ship. Three hours and his vigil is rewarded by a flashing twinkling light out at sea. “Morse Code!” he cries knowingly.

“Good!” replies the Officer. “Can you read it?”

There is that embarrassed silence that tells all!

“Oh Bloody hell! Oh B - - - - hell!”

The Officer moves slowly towards the fire. His steps are heavy, his head shaking from side to side. Painfully he stoops and picks up a burning branch from the fire. With a sigh, he starts to signal ‘Alert.’

“Sir,” it was the Boy. “I didn’t learn Morse at Ganges.”

“Boy, when we get back on board, I’m going to buy everyone here a bottle of beer. Then you are going to have a short course in signalling followed by a test!”

He did! I did! — I failed!

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## Son of Jaws

by Peter Thomas

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“Out there” I panted, dripping in my soggy shorts and revolting sailing shoes, one arm pointing vaguely at Plymouth Sound like that famous painting of the boyhood of Raleigh, (or some other player like that) “Out there is a BLOODY GREAT SHARK!”

The old fisherman digested this vital information impassively whilst grinding another 10 thou off the stem of his pipe. At length he remarked, with just a tinge of concern, “I ’ope yew din frighten ’im.” At this point I recall going into orbit. “Frighten ’IM” I yelled, “it scared ME right out of my ’Y’ fronts.” The fisherman was unimpressed, “’cos if yew dew” he continued, “he’ll flick his tail an’ smash a fair old ’ole in that silly little boat of yourn.” “Anyway” he concluded, “’tis a well known fact that they do only eat plankton — see.” and after this extended conversation, he disappeared into the “Hound and Whippet” to rejuvenate his tonsils, leaving me feeling a sight more foolish than usual.

We’d been about a mile off the breakwater, me alone in the family Mirror 17360, and Martin and Brian, ex-Mirrormen of note, ensconced in this venerable Merlin Rocket. What appeared to be amphibious blackbirds were diving under water and re-appearing some time later a distance away in an interesting, but non-productive display. An informed source has since told me these



beasts could have been cormorants, they could equally well have been bald-headed eagles for all I know. Any road, two of these creatures seemed to be rather slim style versions and were holding station about 5 ft. apart with their heads under water.

I was just considering how they could possibly hold their breath that long when the pair of them suddenly accelerated between our boats and shot off towards the breakwater. As they passed I noticed two things. The first was that these birds were a funny triangular shape, and the second was that my bottom came in over the gunwale all of it's own accord, rather smartly. Realisation dawned. "SHARK!" I screamed at the other boat. Brian and Martin looked at one another, and then at me with that familiar 'humour Thomas, he's off again' expression on their faces. "Who?" inquired Brian cautiously. "That was a shark," I shouted, pointing. Heavy breathing could be heard, then, as loyal sons of Albion, bred from centuries of sea-going heroes, we beat it for the shore.

I should perhaps remark that the Mirror is a rebuilt one and a shade on the heavy side. You see it was an insurance write-off retained by the Company as a suitable subject for a series of 'Mend your Mirror in three easy stages' type of picture strip, issued to policy holders as a help to D.I.Y. repair artists. However, about the same time that I was raising a hue and cry about getting another Mirror, a further example came to light on which a beach hut had collapsed. This presented more of a challenge to the insurers' ingenuity, so 17360 came vacant so to speak. The word was that it had fallen off this roof-rack, so I bought it sight unseen. When I collected it from the well-known Karslake Hauliers Inc representative at Crystal Palace, it became clear that the one question I should have asked was how fast the roof-rack had been travelling at the time!

Anyway, some time, and five sheets of almost ¼in. BS1088 ply (metric innitchief) later, and using most of the original opened out on the garage floor like a dress pattern, a new hull emerged that will leave sizeable dents in unwary Fireballs. As it was intended basically for the Missus and kids, and all the hard work had by now been done, wife Joyce decided to have a hand in the naming

of this craft. Swift rejection came for . . . 'Arkansaw Chugabug', 'Missus Marques' and even 'Pheasant Plucker.' Regretfully, 'Ferret Wrestler of Norton Malreward' met a similar fate due mainly to the high cost of stick-on letters. Instead divine inspiration and feminine intuition combined to produce 'REJOYCE!' as summing up the situation exactly. The only trouble is, whenever it appears on the gravel pit certain individuals feel constrained to break into hymns, out loud.

The Merlin, on the other hand, was almost sold the same evening. We were in this bar somewhat after hours (We do still have double Summer Time round here young sir) with these two tidy looking blokes who were showing exceptional interest in the boat. When asked why this particular Merlin should excite them, they explained it was all to do with the sail number. "O.K." we said, "it's 999, what about it?" "Well" said one of them, "we could change it's name to 'Evening all!' because we're in the C.I.D." Several respected patrons went a very funny colour at this revelation, and as the barmaid fainted behind the bar, he added, "but we're on holiday just like you, have we time for one more?" We had actually, several more, for the medicinal content you see, although my wife says this is as weak an excuse as buying Playboy for the Gardening hints.

The next day we got up very gently, feeling about as sharp as a beachball, and looked at the day. It was a touch humid, in plain fact it was - - - ing down, so we got all bundled up and went for a slow walk around the headland in a vain endeavour to re-orientate with critical inputs, like which way was 'up' and suchlike. Perched on the end of the landmass was a coastguard station, complete with solitary officer. Memories flooded back of rowing drunkenly around a mist-shrouded Broads anchorage, bumping into cruisers, loudly inquiring "Be you the Revenue cutter?" and getting an interesting series of answers, until one boat declined to reply, and turned out to be our own.

The bored looking coastguard seemed glad to see us, laughed about our shark, apparently a basking variety, and let us play with all his gadgets, binoculars, watch his radar scanner, and listen to the Roscoff ferry reporting her position, and ETA. Brian was busy reading the log, "Just think, every-



thing that happens is noted down here" he marvelled. "Not quite everything" said the coastguard smiling, "Sometimes we get these phonecalls . . ." Our interest came alight. "What sort of phonecalls?" we asked. "Well, I had one late on t'other night, lady said she could see these lights in the sky." "Where's these lights to then madam?" he'd asked. "Out to sea look, that's why I rung you." "Which way would you be facing then madam?" "Well I'm stood by our bedroom window

with nothing on look."

"What's your husband make of all this then?"

"Oh, he's on nights, he is."

"We'd better just have your address then, just for the record."

"Yes, well I got all that, madam, but it's a sight too far across Plymouth to come this time of night, but if we're ever in the area . . ."

And if you're ever in the area, try the sailing, it's great, only these cormorants, bald-headed eagles, or whatever, do have these dirty great teeth . . . look.

## Love swells like the Solway but ebbs like its tide

by Ean McDonald

(Scott — Ballad of Lochinvar)

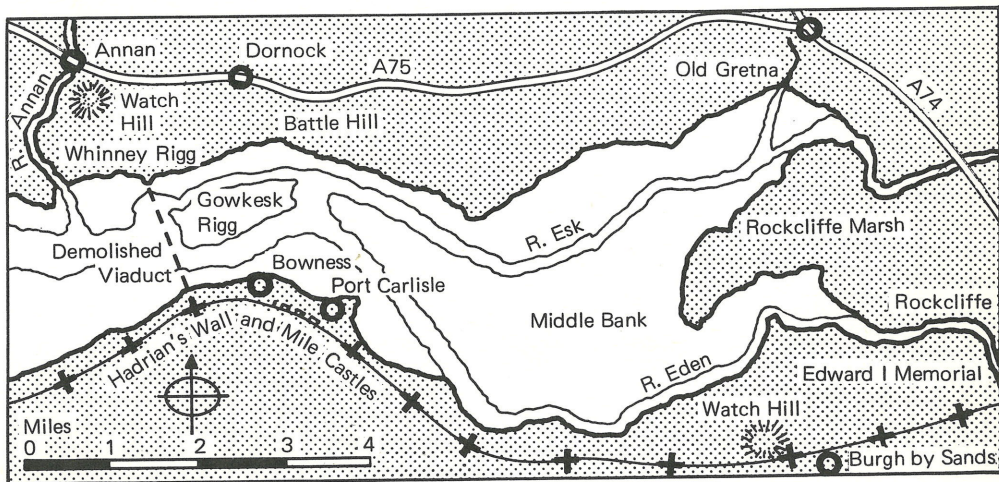
Sir Walter was no stranger to the Solway as his novels 'Guy Mannering' and 'Redgauntlet' indicate. But perhaps only a Solway-sider born and bred can savour to the full the romance of the upper firth. The scene alters constantly as season, wind and weather dictate, and with every rise and fall of tide, and changing light and shade on water, sand and pastoral shore.

Part of the frontier from prehistory between a succession of tribes, then between two nations rarely in happier relationship than

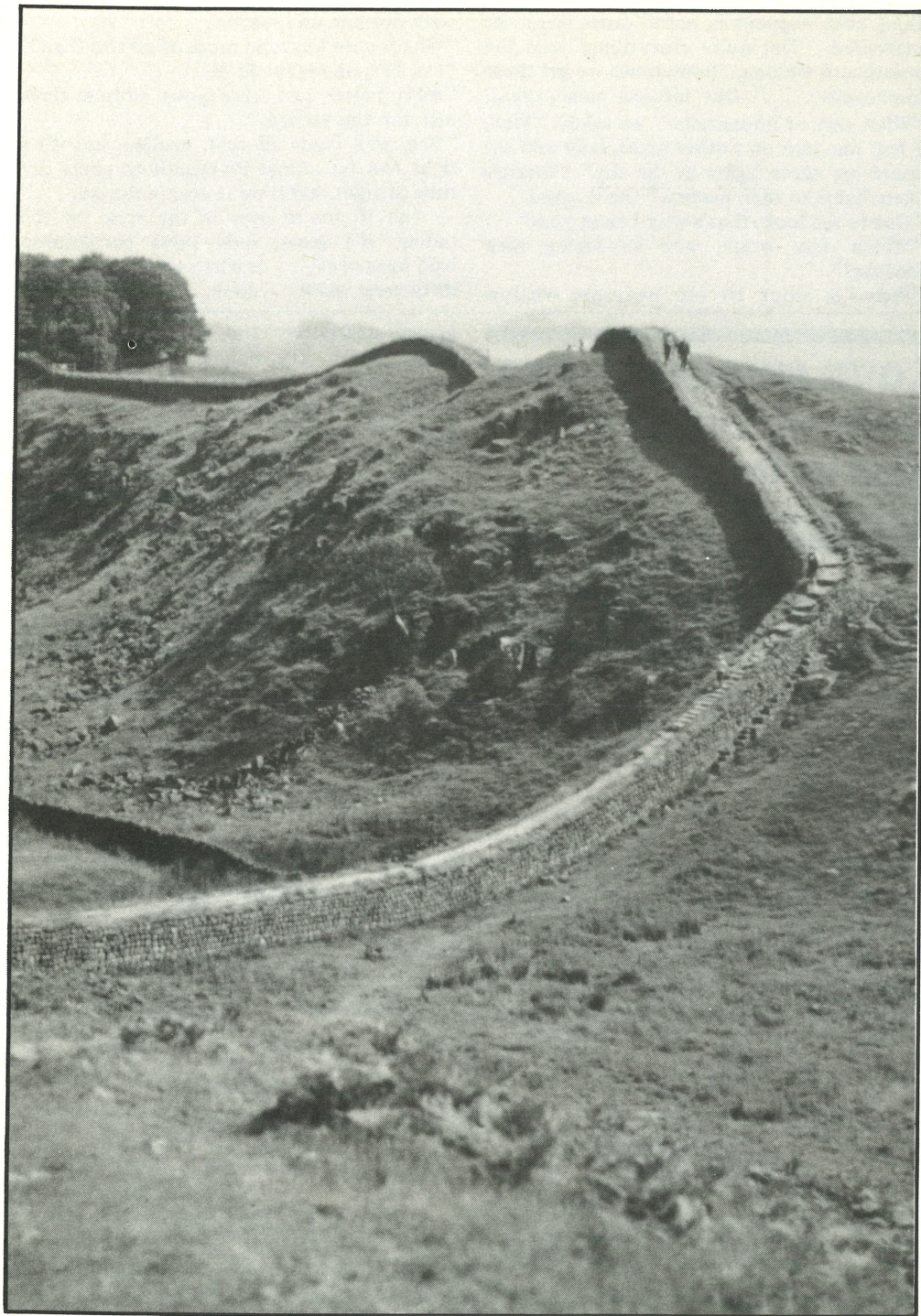
armed neutrality: and even after their so called union, the happy thoroughfare for generations of smugglers, it has acquired a wealth of local history and tradition. Of legitimate traffic — fifty odd gaff rigged craft which at the beginning of the century 'whammled' for salmon or trawled for flat fish and shrimp out of Annan Waterfoot alone, all have gone. Indeed the only craft that float today below the points where Esk, Eden, Annan and Nith reach the sands, are a few duck punts.

Nor are craft likely to return unless the mooted Solway barrage brings to the area not only a welcome accretion to the country's energy resources but a new haunt for amateur sailors.

I have lain under Solway's spell ever since as a lad in my early 'teens I built my first boat, a crazy thing of canvas and battens, and launched it into a Solway flood and paddled off up the Esk channel, so cautiously hugging the shore that more than once I









entangled myself in the maze of a salmon stake net set. But soon my fortunes took me elsewhere, to mess about in boats in three continents for the next sixty years, with the usual marine misadventures and some exotic experiences such as clawing off a tiger infested shore in the dark, and fending off floating mines in a night passage of the Baltic Sound.

At the end of the season some years ago I decided that it was time that I packed it up and devoted my attention to my garden. It was then that I had the crazy idea to make one last trip up Solway, for auld lang syne. It was 15th October. Next day gave a 28 foot spring, H.W. 1258 at Annan Waterfoot. The only trouble was a craft. Luckily 'Le Mirage' my Mirror, had not been laid up, nor relegated to the humble role of garden tool rack. I heaved her up on the top of my ancient Bedford truck and at 10.00 hrs., the seven o'clock forecast fine with a light southeasterly breeze, was waiting at Whinnyrigg, the only place within miles, where I could both get my transport to the shore and find sand hard enough to trolley 'Le Mirage' out to the Esk channel at the first sign of the flood making. And here occurred the first slight contretemps. As I was dismantling my trolley — wooden for lightness — by the water's edge the flood arrived as Solway springs do, with a little bore and I was chasing half a dozen pieces of floating wood and a half rigged boat, setting off for Carlisle on their own along six separate paths.

Order having been restored and everything stowed I got underweigh, having remembered to chalk my intended 'flight path' and E.T.A. on return, on the seat of my van. I intended a slight variant from my first passage so long ago. I would cross to the English shore and see how far up The Eden I could manage and still get back to my starting point on one tide. This involved the navigation of a tricky swatchway round the eastern end of the Gowkesk Rigg between Esk and Eden. It did not matter very much eastward bound on a rising tide. Coming back on a falling one was another matter. I took the precaution of plotting its present run before the tide covered it and noted leading marks of sorts on both Scottish and English side.

There was something slightly ridiculous but also exhilarating about a Mirror being pushed by the stream into the wind so that she pointed as high as an Eight Metre, bucking the overfalls like the good little seaboard that she is, and as was apparent when she closed the Cumberland shore, making about four times her theoretical waterline speed over the ground.

As I reached across toward Port Carlisle the bell of Bowness on Solway Parish Church, booty from a sixteenth century raid on that of Dornock, tolled briefly to starboard. Now properly into Eden close inshore with long and short tacks alternately, cud chewing cows stared incuriously from a bank where once Roman sentinels stood. Sooty shags wading on the mid firth shallows seemed swollen to twice their proper size by some mirage. There was no other sign of life. Off Burgh by Sands the snarl of traffic on the A74 came down the breeze muted to a murmur by the miles of Rockcliffe Marsh. Otherwise it was as quiet as it must have been on that day when Edward Longshanks lay dying within sight of the Solway (ford) which he was never to cross again, to hammer the Scots.

I made Rockcliffe, 13 miles up Eden, with just a trace of flood still running. I was tempted to sail on round the next bend or so, just to log that I had at least seen Carlisle, but the temptation of the Rockcliffe pub was stronger, even though I allege that they don't make such good strong ale south of the Border. There was time for a pint only. By the time I had got back to the little creek where I had moored 'Le Mirage' the ebb in the Eden was well established. Solway springs waste no time. They cannot afford to with a 20 square mile basin to fill to 15 feet above the level of Annan Waterfoot — datum 13 feet —, in about three hours and to empty again in the same time. Apparently back to low water, riverain conditions, the very last of the tide water runs out with a drop of 3 inches a minute.

Above their confluence, off shore in a welter of soft banks just East of Annan, Eden and Esk hug the English and Scottish shores respectively, the widening Middle Bank separating them and drying at low water. For as long as there has been any record there has been a single swatchway running diagonally across near the tail of the



Bank where the outward curve of the Cumberland coast deflects part of the Eden fresh across to Esk. Its name, the Gowkesk (foolesk), suggests long dead fishermen, or contrabandists, feeling their way up Esk on a foggy night and straying without hope of retreat into hostile territory. Its exact run changes continuously so perhaps the name merely reflects the irritation among the poke and half net salmon fishermen on the Scots and English side, one or other party of which loses valuable net ground with every change. I had already plotted it before I sailed. The conventional indication of submarine contours and shading on Ordnance Survey maps may or may not bear some resemblance to reality when the map was produced, but are really only there because our map makers cannot bear to see blank areas on their beautiful productions (apparently they are becoming less sensitive.) Needless to say the Admiralty (sorry - Ministry of Defence, Navy) have for obvious reasons never bothered to chart the upper firth.

As the breeze dropped on my homeward passage the visibility decreased. It was going to be a close call to get back across to Esk. Almost before I had established the ebb set to port and my correct heading to meet it, my English leading marks and soon all England disappeared. Of Scotland, only a mile away there was of course, no trace. There was still just enough water to mask the actual line of the swatchway but not enough on either side of it to float even a Mirror. A few of Davies of 'The Riddle of the Sands' famous 'booms' would have been very useful. I hailed with relief my landfall on the Dumfriesshire shore, two white huts appearing suddenly out of the haze a bare two cables ahead. I had no mind to be disclosed by returning visibility, the latest gowk stranded on the Middle Bank or on the Gowkesk Rigg (island bank) and perhaps triggering off an unwanted and unnecessary rescue. However laborious the amphibious completion of my passage would have been I was prepared for it, with my stowed collapsible trolley and nine hours to make it.

The appearance from nowhere of a little sailing boat, red from headboard to water line, where sail of any kind had hardly, if ever, been seen since the shrimpers took to power forty years ago, provoked a shout

from two men by the white huts. They must have been reduced to silent amazement when its sole occupant suddenly appeared to abandon his craft and go splashing about in lunatic circles. Almost into Esk I was about to ground at the last bend of the cross channel. No time to poke about overside sounding with a jib stick. It was a case of out with a kedge and after a cautious prod to make sure that this was a hard sand, not a soft or even a quicksand, to quest about on foot to establish the fall of the bank. I made the Esk channel with about 2 inches and a minute to spare.

If I may add a word of caution to anyone who, having read of this caper, is encouraged to put a craft afloat on Solway, east of the line from Southernness to Skinburness. It is no place for uninstructed amateur boatmen. any more than it is for hikers tempted to essay its dubious fords from one of which, the Solway (mud way), it takes its name. As kids we locals were taught to respect, even to fear, the Solway, the lessons reinforced by frequent skelpings by parents and fisherfolk. Naturally in conformity with the parent-child relations of my young days, reasons were rarely offered or demanded. But there are many newcomers to the area these days whose cars line the shores every fine weekend throughout the summer. Every year Solway drowns too many duck shooters without having their numbers added to from the ranks of smallboat people.

In no way differing from other estuaries with high strong running tides, Solway can without apparently any warning lead into dire trouble those who, afloat or afoot, are accustomed only to the more deliberate coastal tides which give ample notice of their intention to change direction in the vertical or the horizontal plane. Almost before the first flecks of foam borne on the young flood have passed upstream of an observer on the low-water shore line, the water is rising sometimes as much as a foot in five minutes. Meanwhile it may be sneaking into hollows behind the watcher at the same rate. And what a few minutes before afforded a smooth passage for a loaded dinghy from an island bank about to cover, to the shore, can even in a light breeze develop vicious little seas when the hard running flood becomes weather going.



# Excusez-moi, est ce que c'est Sangatte?

by Norman Barron

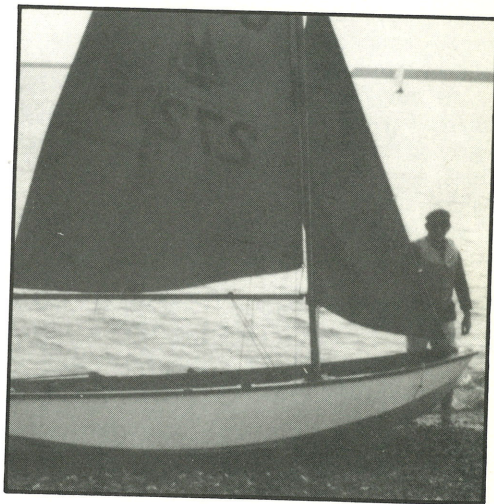
It had taken us five hours two minutes from the beach in Dover Harbour to the beach at Sangatte, 5km. southwest of Calais. That was the easy bit. Many hours more than that relatively short trip had been spent in planning and organisation. What had started it all was an off-the-cuff remark to my friend and fellow Mirror owner, Lindsay Walker, that crossing the Channel would make a good cruise. But that was two seasons before. We had read in our club newsletter (Seasalter Sailing Club) of a Mirror, (not from Seasalter,) crossing singlehanded in a force 7, but that sounded rather foolhardy to us and we were determined that if our plan got off the ground, or rather, on the water – safety would be the watchword.

In the summer of '74 we had asked around our friends and acquaintances at Seasalter to see if there was anyone else interested in accompanying us. Only one person came forward, headmaster Peter Holiday. He was as enthusiastic as we were and wanted to take his twelve year old son, Angus, as crew. Well, the '74 season finished and we hadn't even got as far as looking at a chart. (We did have a cruise circumnavigating the Isle of Sheppey, though.) Things bucked up early in the '75 season and we had the first of our meetings to discuss possible dates, route, equipment and so on. June 21st seemed a good bet. It was a Saturday, the longest hours of daylight possible, tides were suitable and it was convenient for all of us. It was agreed that we would gauge the reaction of the coastguards at St. Margarets, Dover. They are responsible for that part of the Channel we intended to cross, and in fact, co-ordinate rescue services in conjunction with their counterparts on the French side at Cap Gris Nez (15km. from Calais.) Lindsay and I made a visit to the station where we were made very welcome and given a guided tour. We asked what they

thought of our venture and their reply was cautious but encouraging. "Are you experienced?" "Is your boat safe?" "Is your equipment in good order?" "Can you navigate?" "Would you carry flares?" We could confidently answer "Yes" to all of these.

Fears we had amongst ourselves were weather, i.e. too much wind, no wind at all, fog, failure of rigging, etc. We had already decided that if the forecast was not right – i.e. more than force 5, less than 1-2 or any possibility of poor visibility we would not attempt to cross at all. I think our greatest fear was poor visibility; this we knew could be very frightening and dangerous.

At our second meeting Peter, Lindsay and I pored over the charts of the Straits of Dover, and Lindsay plotted two possible courses. One of these would be used if visibility was not too good and we would be 'buoy hopping,' the other was one straight line from Dover to just outside Calais, (allowing for the tidal drift of course).



It seemed a sensible idea to do a 'recce' before the big day, so Lindsay and I towed my Mirror (27205) to Dover the weekend before the 21st. We set a course for the Varne Lightship (7 knots SSE of Dover). The light is just beyond the 'down lane' of the Dover Strait so we had our first taste of crossing a major sea lane. This in fact is the most difficult part of the crossing in my view, for the lanes can be busy with what seems a continuous stream of large, sometimes very large, commercial shipping. Make no mistake



about it, some of these tankers seen from a level of three feet as in a Mirror Dinghy, appear frightening. There comes the moment when one has to decide – “Can I get safely between these brutes?” The hardest thing is judging their speed and distance, for of course one does not want to be in the position of having to go about or into irons to let it pass. You are very vulnerable in a small boat in mid-channel! Even if one of these monsters has seen you – and it’s entirely possible he hasn’t – he is not going to alter course for you!

As it happens we found a convenient gap to cross at right angles to the lane in safety. A little farther on we circumnavigated the Varne Lightship with a quick wave to one of the men on board and retraced our course in the direction of Dover Harbour. Exciting, rather uneventful but valuable experience in that we calculated our speed over a known distance, got some valuable practice navigating with the chart and compass and saw what it was like ‘out there,’ and we had a timely reminder nearing the harbour entrance of how strong the current is in the Strait.

At our final meeting we pored over the charts yet again, consulted the tide tables, checked each pack of flares, (one for each boat) and agreed the equipment we would take. This consisted of one small light tent, a sleeping bag each, first aid kit for each boat, spare jibs, one spare main, spare shackles, sheets etc., oars, anchors, torch, camera, extra clothing, binoculars, radio, passports, currency, food and drink.

We agreed that no matter how warm it was on the day, we would all wear wetsuits, and of course buoyancy. Coast Guard forms were completed and posted and a system of communication devised for our nearest and dearest to ascertain our arrival (or otherwise) in La Belle France. Long range weather forecast confirmed as good. All set for the off – roll on Saturday.

Peter and Angus breakfasted at home at 4.30 a.m. and then car-topped their Mirror 29063 on their faithful A35 to Dover. Lindsay and I towed his Mirror 13920 to Dover on Friday night and parked along the cliffs overlooking the Channel.

We were awakened by sunlight at 5.30 a.m. to the most marvellous view over the water – even making out super-tankers on

the ‘up lane’ nearest France – visibility couldn’t be better. A quick but substantial breakfast and then a five minute drive to the harbour in beautiful sunshine where we found that Peter and Angus were already there and well on the way with their rigging. Two hours and twenty minutes later we were ready to launch. This is a long time to rig a Mirror by normal standards, but this wasn’t an ordinary journey. Everything was patiently packed for best balance and convenience of fit, and everything, rigging especially, was double and treble checked. Each boat had, of course, been given a thorough going over days before to seek out any possible defects. After parking the cars





and taking some photographs we were off. Time 08.20 precisely.

Wind strength force 4, northerly direction, giving us a very broad reach to a run, just the wind direction we didn't want; however it was steady. Ten minutes later we crossed the bar at the southern harbour entrance. A gentle swell, warm sunshine, a Hovercraft departing, a cruiser on a similar course to us at our stern, various cross-channel ferries going about their business, and nothing else except a lot of water. It seemed no time at all before we'd crossed the 'down' lane then caught sight of the Varne lightship on our starboard bow. Here we took time to check our speed from distance covered — results

showed  $4\frac{1}{2}$  knots. Peter and Angus were only 30 yards away and they'd just acquired a non-paying passenger in the form of one young lark atop the mast. He quickly disembarked in favour of us, and as the poor thing was exhausted I fed him some of Lindsay's fruit cake. After a pause to gather his strength he took off again and we often wonder if he ever reached his destination.

We approached the 'up' lane correctly at right angles, and observed a freighter on our starboard quarter. Taking into consideration our relative speeds and other factors such as course direction and wind strength, a quick decision had to be made whether to 'stay on' or 'go about' and let him pass. We decided to 'stay on' and crossed in front of him with sufficient margin of safety.

Shortly after this there was a quick change of weather, becoming overcast, cooler and with an increase of wind, but at the same time we could make out the French coast-line — which at that distance was a line, monotone and grey but gradually taking on some shape. I made a hasty check with the chart to see if any marks were identifiable but we were too far away. Then Peter informed us in no uncertain terms that we were too far down the coast from Calais. There were a few muttered oaths and we made a quick change of course to port which put us on a close reach. With the wind strengthening and a greater swell we were taking water over the side. By now I was frantically bailing, attempting to lean out and pathetically trying to see the coast through binoculars. The latter was a complete waste of time, as on such a small boat the swell is moving it up and down through such an angle that it is difficult to focus on the horizon at all. So I repacked the binoculars and continued bailing, keeping a constant check on Peter's position while Lindsay pointed us up the coast towards Calais. I'm not usually seasick in a Mirror but I couldn't hold back any longer, and having some respect for Mr. Walker's boat I used the hand bailer! About fifteen minutes more on this course brought us close enough to the coast to identify shapes of cliffs and what looked like a radio beacon. The chart showed a corresponding picture so we had an accurate idea where we were, approximately 3 miles or, more appropriately 5km, from the village





of Sangatte, which has plenty of sandy beach.

As we neared the shore the church spire was visible and gradually buildings became more distinct and even a few people could be seen on the beach. I suggested that we should land at Sangatte, slightly further from Calais than we originally intended, and gave arm-waving signals to Peter to inform him of this.

The waves breaking on the shore made it impossible to land without being swamped, but seconds later we were over the side on terra firma and Peter landed a few yards away directly after us. Congratulations all round, especially to young Angus who had been a magnificent crew far in excess of his years, then I offered to go up the beach to confirm our location. In my truly awful French I asked the first person I met whether this was Sangatte. I was alarmed to hear the reply come back in a Belgian accent! But no, Mr. Walker's navigation was spot on and the gentleman was, like us, visiting Sangatte. The next ten minutes were spent carrying the boats up the beach and hanging the sleeping bags, clothing, etc. up to dry between the Mirrors. (Useful little boats).

Peter and Angus had done the sensible thing and had eaten on the journey. We hadn't and were starving, so voraciously tucked into salt-water flavoured sandwiches, channel flavoured cake, salted chocolate and peanuts marinated in brine. At least the beer was uncontaminated, thank God.

After eating, an attempt to rig the tent on the beach without much success. Decided to have a go later but in the meantime called the coastguard at Cap Gris Nez to inform him of our safe arrival. We all wanted to go to Calais but by what method? Bus, of course, except that, contrary to what the locals told us, the last one went an hour before, so up went the thumbs of four foreigners in a motley collection of garb. The third car to pass us came to an abrupt halt and ten minutes later we were in a Calais bar enjoying a welcome drink and writing the obligatory postcards. A friend had recommended a restaurant whose speciality was, of course, seafood. The meal, eaten at a leisurely pace and washed down with a carafe of vin ordinaire gave us an opportunity to converse on a variety of topics, not least the possibility

of worsening weather the next day. (It was now pouring outside).

After sleeping on hay in an open barn (the tent didn't stay up), we awoke the next morning to find our worst fears realised — rain lashing down and thunderous grey seas. An early call to Cap Gris Nez told us that there was a force 7-8 and the probability of worsening on the following day. Over breakfast in the local bar we all came to the only sensible conclusion, i.e. return with the boats by ferry. So we commandeered the telephone to organize transport for the boats to Calais.

Just before noon we were in the docks at Calais only to discover that we hadn't quite enough currency for the fare for us and the boats. (The ferry companies reckoned that each Mirror should be charged on the equivalent car length). Unfortunately neither the AA, Sealink or Townsend were any help on that score — no money, no tickets. In no way were they prepared to help or make any kind of constructive suggestions. While Peter and I were trying to get some sense out of these obstreperous (French) representatives, Lindsay and Angus found the English owners of two Enterprises who, surprise, surprise, had also sailed the channel the day before. With unhesitating generosity they offered to loan us the extra cash we needed for the fare and then we helped each other to carry the boats from one end of the docks to the other ready for embarkation.

After all the TIR lorries and cars had been loaded we were allowed to run down into the hold with the boats.

Our Enterprise friends had seen us leave Dover harbour on the Saturday, but they had sailed into Calais harbour in less than four hours. Like us they had come to the same reluctant decision and decided to return by ferry. Swopping respective stories on the voyage, Lindsay's absence was noticed. It turned out that he had been to see the captian who had very kindly arranged to have our boats taken off by fork-lift truck at Dover. The homeward journey was rather quicker than the outward (and more expensive) but a lot less exciting, plus we had to take the ribbing of the ferry's crew for not sailing back.

However, next time we hope to manage it both ways.



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# Crystal Palace or bust

by Peter Thomas

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I always think that there's more to sailing than just doing it. The curate of our local church bears this out, too embarrassed to tell his new bride he was to lecture the Women's Institute on sex, he told her the topic was sailing. A week later his wife met the Chairwoman of the W.I. out shopping, and asked how the lecture had gone. "Well," said the lady, "he was nervous at first, but soon regained his composure." "I'm not surprised" confided the wife, "between you and me, he's only tried it twice — the first time he was sick, and the second time he nearly blew his hat off!" But I digress. The next best thing to fiddling with your boat is seeing how other people have fiddled with theirs, so Martin, Brian and I planned a trip to the Big City to take in the Crystal Palace Show.

Like all good plans, it was modified extensively. First the wives found out that the Ideal Home Exhibition was on at the same time at Olympia, and that's on the way, isn't it? So the entourage was enlarged to two cars. Sally was kindly bringing a battered Mirror to C.P. for us to collect, and a boat trailer was added on. Fond grandparents blissfully awaiting Mother's Day cards were shaken to have off-spring dumped on them instead. ("A special treat Mum — must dash!")

The M4 was crawling with the fuzz, all trying to snap up week-end speeders. Jaguars, M.G.s and even Transits were going up and down the slip roads like jam-butties Yo-Yo's. More annoying were the prices in the Service Area Cafeteria. I can see why the cutlery is largely plastic; anyone having to pay 56p for two coffees, a small pie and a slice of cake would feel justified in nicking real stuff in retaliation. We were clearly approaching the Big City and a smart look-out for streakers began.

At Olympia, everybody and his dog were queueing to get in the place. We circled to find somewhere to dump Brian's Escort, but couldn't find anywhere. All we could find

were yellow lines, police no-parking signs, police, coaches and 'car park full' notices, and police. We simple West Country folk are just not geared into this scene at all. Selecting a likely corner liberally sprinkled with a fair selection of the aforementioned impedimenta, we parked, whipped the trailer off the back, and removed one of its wheels.

A car park attendant descended on us. "Wassamattergotbovveravyuh" he intoned. Martin and I looked at one another, a communication gap had opened up — was this native suggesting we were in some kind of distress? We pointed to the innocent, fully inflated tyre lying in the road and glared at him. "Punchureinitchief!" he said brightly, and departed. We looked grave and fiddled about for about 15 minutes with spanners, nuts, grease and spare wheels, while the fuzz tried to work out what our game was. Brian reappeared, having apparently joined some residents association unasked, and parked in a side street. In one minute the wheel, now polished and greaseless, was on, and we, dirty and greased up, were in the car and off. Meanwhile, the girls had discovered that you can get into Olympia via the Tube Station, without having to queue out in the cold, and only get searched for bombs once, although I gather the bloke doing the searching was so efficient, they were tempted to go round again.

Serious navigation now began, only to be foiled by a solid looking copper who was adamant we could not go where we wanted, we must go where he said. The first likely looking road going south appeared . . . and we dived into it. Now we have street markets down our way in such centres of population as Chipping Sodbury, but we don't stuff them down little side streets like they do in London. People carrying all manner of things dodged around the car, and, turning to regale us with centuries-old London street cries, collected the trailer. We escaped in the direction of Wandsworth Bridge. Now at Keynes Park S.C. we are but a couple of miles from the source of the Thames at Cirencester. There you can take pictures of your young'uns standing astride a sparkling clear brook. We looked down to the turgid mass of grey soup. "They've let the whole thing get out of control" said Brian sadly.



Martin, a man who can boast a cupboard full of trophies awarded for prowess at rally navigation and advanced needlework, announced that the duel carriageway we had just joined did not exist, as it was not marked on his A-to-Z of London. As it was priced 2/6d, and exhorted the reader to buy Bonds for Victory it was hardly surprising. We crawled the last mile to Crystal Palace, being repeatedly passed by the same pedestrian, who infuriated us by doing his shopping and starting back just when we thought we were gaining on him.

At the National Sports Centre, the Car Park attendant was harbouring this quaint idea that we should pay him to park about a mile from the exhibition. Clearly the communication gap had yawned again. Repeated pointing at the trailer and making boat shape gestures in the air saw us wound up in the Exhibitors' Car Park parked beside Sally's Viva, complete with sorry looking Mirror on the roof-rack. Brian stuck a yellow thing on the windscreen "All the other cars have one" he explained. "I just found one for us." Walking into the Crystal Palace after 6 hours of various endeavour seemed a massive anticlimax.

We began to marvel, wonder and listen as we circulated around. At the International 14 Stand we were thrilled to hear that Jeremy was going to be at Burnham next week with Adrian and Nigel. Clearly this was all very 'in'. We hoped to be at Nempnett Thrubwell next week for the ferret wrestling, but this event did not hold the same significance. We escaped to the sanity of the Mirror stand, only to be downcast at the glossy finish on the boat 'Leo'. David Whittock obviously doesn't sail on a gravel pit; I can just imagine the reply we'd get to a request to the crew to jump out into waist deep 'oggin to save the paint! But what a fantastic job he's made of that boat! Talking of fantastic work brings us to our Star exhibit stand, the Hornet Class. Their Association offers not only the mundane ties, cuff-links and 'T' shirts, but also ladies bikini panties decorated with lace and the Hornet insignia! What about it, Sally! Mirror knickers for the masses! Just the thing for an emergency protest flag, or to summon the lifeboat in a hurry.

After watching depressingly expert kids cavorting on the fibre-glass spring boards of

the pool, and a pair of films, during which the projectionist received more applause when he belatedly got the film in focus than when it finished, and munching the cooked cardboard fare available, it was time to start back to Bristol.

Our overall impression was very favourable, how nice to see well varnished wooden boats, sensibly equipped, without having to fight through a welter of motors, gin palaces, and potted palms. How great to talk to people who know their subject, and have genuine enthusiasm. One moan only. Who really has more than a passing interest in the Club stands unless you live nearby? If the Yachting Press can sell their wares, why not allow a couple of good chandlers to set up shop, and filter off a percentage of their take for BOYA or similar good cause? I know it cuts across the spirit of the event, but you could then buy the goodies to copy that good idea on another class boat while the thing is still fresh in the mind. We'll come again, even though London is so bewildering to us simple country folk.





# Three days in Poole Harbour

by Patrick Beatt and Mark Hayter

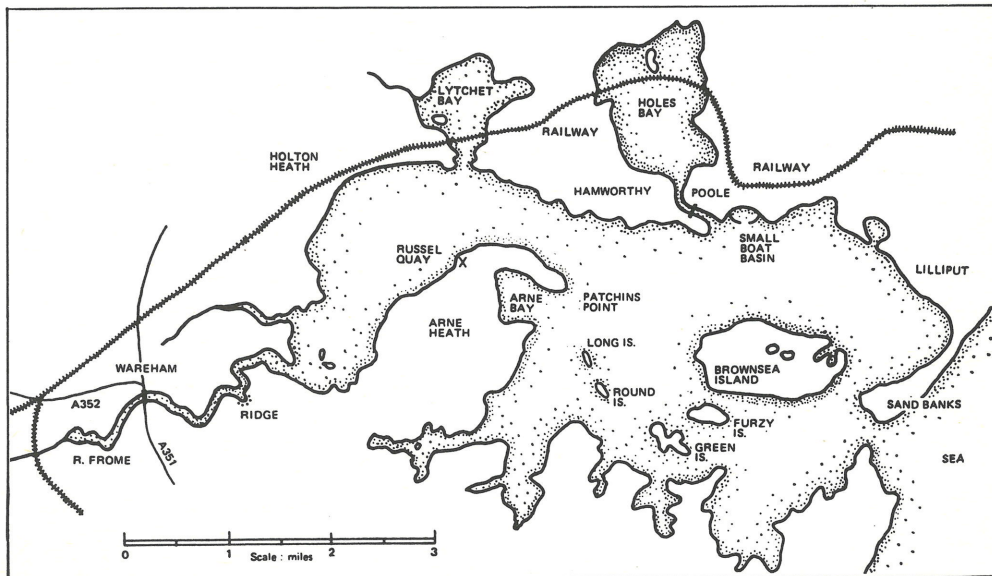
On 7th August, after weeks of thought and preparation, an idea, born in April, was finally put into practice. After three seasons of sailing *Mirror* 38264, daycruising and racing in Weymouth Bay, we decided it was time to try something more ambitious, such as a few days cruising and camping at nearby Poole Harbour.

Poole Harbour is the huge estuary of the River Frome in Dorset. It has over 100 miles of coastline. To the north and east are the towns of Poole, with a commercial port, Lilliput and Sandbanks. To the south and west the shores are mainly wild heath land with isolated farms. A phenomenon of this area is that, due to the shape of the Isle of Wight, there are four high tides in each day. We found this very useful.

We had plenty of experience in sailing but this was to be something quite different. We are both sixteen and have a little knowledge of camping but had never been on our own before. Our chart was a one inch

map of the area. We used the radio weather forecast before going but were not too worried about high winds or rain, being in sheltered water, close to land. We carried a polythene wrapped tent a two gallon water container, a wetsuit and oilskins lashed in the cockpit. These were arranged so the crew could lie over them comfortably, while the helmsman had a clear space aft. Two sleeping bags, wrapped in polythene were carried on the foredeck, lashed to the mast. The remaining equipment such as a gaz stove and food was carried in the storage compartments, peanuts and chocolate were kept available while sailing, and had the weather been colder we would have had a flask of coffee as well. We took a large variety of vegetables including half cooked potatoes for frying. Fresh fruit was taken in preference to tinned, we drank coffee with each meal. We used about two gallons of water, in an evening and morning, for washing and drinking. Our container was filled at a public tap in Poole each time we called there.

On Thursday 7th August we arrived at Ridge Yacht Marina on the River Frome where we unloaded, rigged and packed the boat in preparation for launching. At 16.00 hours we launched and set sail down the river. The tide had begun to ebb and so we made a fast passage down the 1½





miles of river. The river is about 30 feet wide and closed in by high reed banks which cut off most of the wind. When we sailed out into the harbour the mud flats were exposed on each side of the channel and we could make better progress. We followed the channel markers for about two miles before heading into a campsite which had been recommended to us. Russel Quay which is, in fact, just a curving beach, is a solitary spot on the edge of the heath, the only connection with the civilisation being a rough stone track, used occasionally by fishermen.

We set up camp above a sandy beach on some grass at the foot of a high, steep bank covered in ferns and heather. This was to be our home for three nights. After spending some time exploring, we cooked supper and went for a short row in the dusk. On returning we pulled the boat up on the beach and tied her with a long warp to a large boulder at the top of the beach.

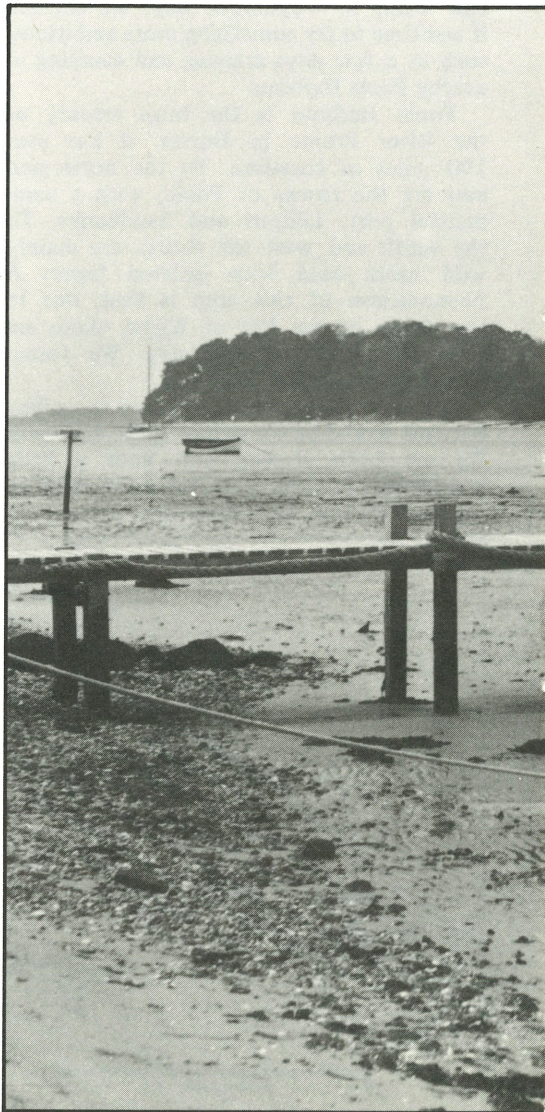
The following morning we were up at 6.30 hours and sailed at 9.00 hours, we sailed along the coast to Arne Bay which we explored for a short time before circumnavigating Long Island and Round Island. On the way the centre board struck a rock under water, stopping us violently and cutting out a small lump of wood from the leading corner. Fortunately this was not very serious and we were soon on our way. We laid a course for Poole commercial port and arrived off the small boat basin at 12.00 hours. We went in and found an empty berth near the lifeboat station where we came alongside and left the boat for three hours at no cost while we bought some food, collected water and sent postcards.

We sailed at 15.00 hours and rounded the west end of Brownsea Island with the crew helming for a change. While running past Furzy Island with the centre board up, the bow wave began to build up on each side. We realised what was happening too late as we sailed onto a submerged mud bank and came to a sudden stop! A combined effort with the oars was needed to get moving again which we soon achieved. By 16.00 hours we were sailing fast on a broad reach, first back to Arne Bay, then past Patchins Point and finally landing at Russel Quay at 16.45 hours.

The sky clouded over after supper and

after double tying the boat and supporting her with fenders we retired to the tent to watch a vivid thunder storm which lasted over an hour. It was almost directly overhead and was spectacular with heavy rain lasting most of the hour. When the storm finally ended we bailed the boat and checked the tent before going to bed.

On Saturday morning we woke at 8.00 hours but managed to sail by 9.30 hours. We laid a direct course for Poole and landed to buy some food and fill the water con-

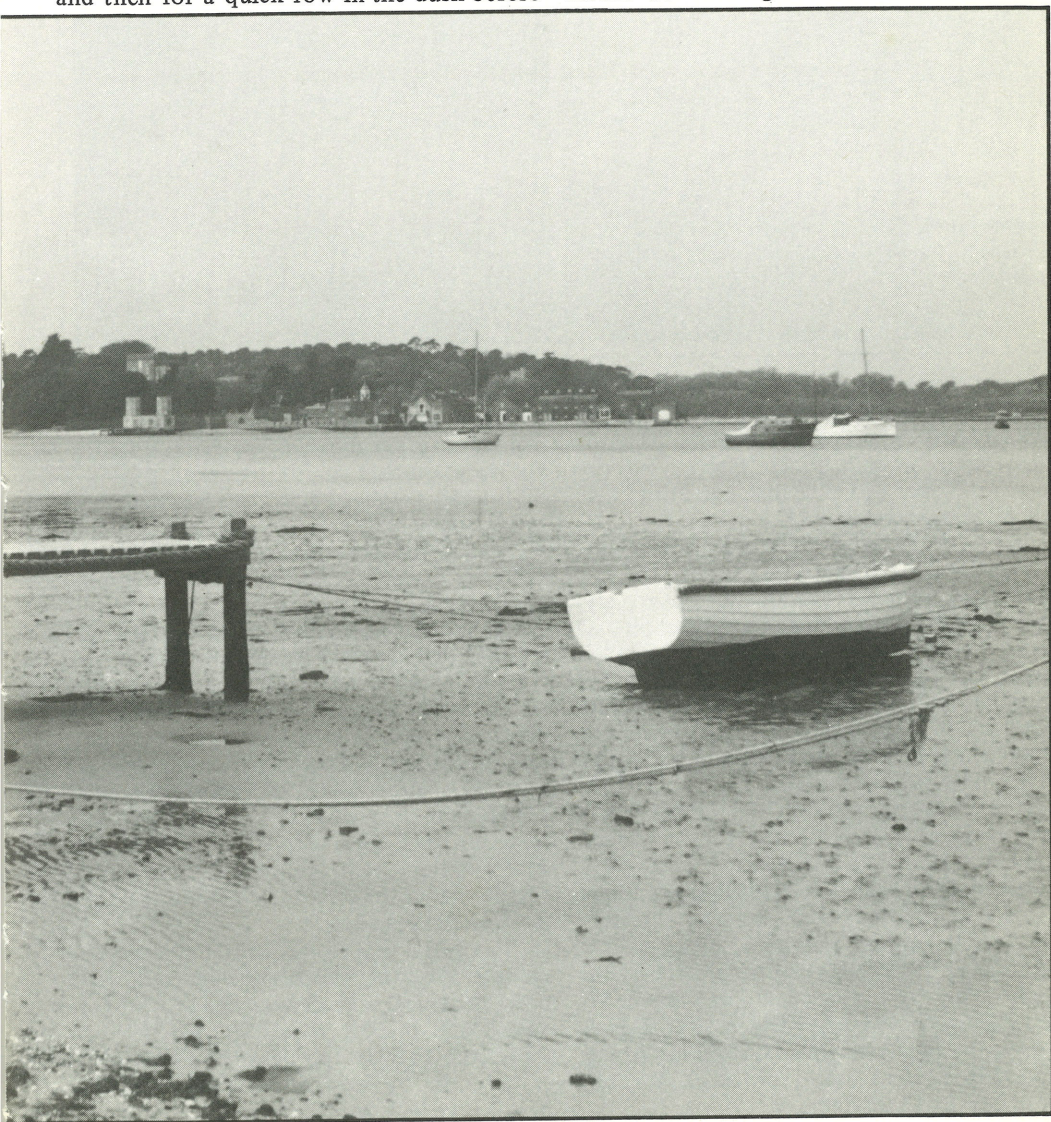




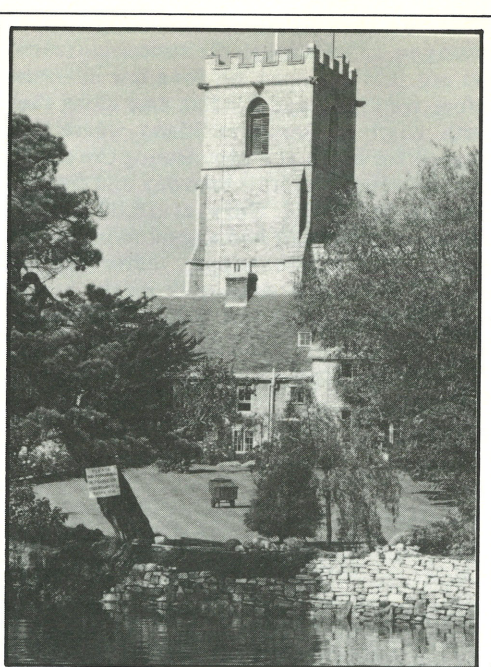
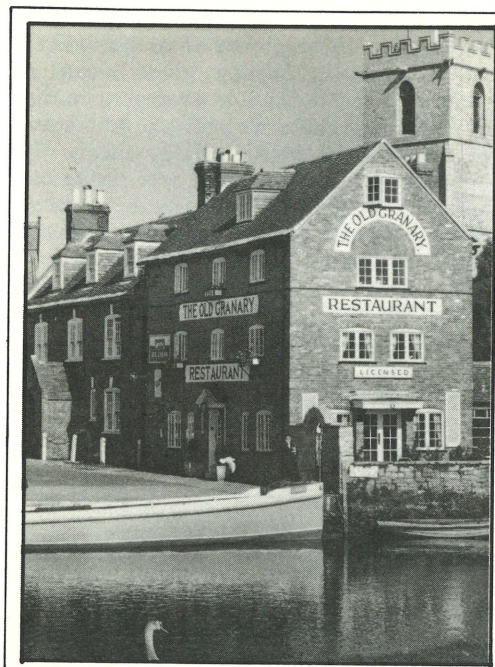
tainer. We then sailed for Sandbanks. While passing we sailed through the narrow entrance and out into the open sea for a few minutes before returning and heading east along the south coast at Brownsea Island where we stopped for lunch at a pier. During the afternoon we sailed back into Arne Bay and finally returned to Russel Quay at 16.00 hours. We set up camp and had a good swim in the warm water before supper. After supper we went for a few miles walk on the heath and then for a quick row in the dusk before

going to bed.

We were to be picked up at Wareham at 15.00 hours on Sunday which meant an early start to use the tide up river, a journey of about five miles. We sailed at 8.45 hours. At about 9.00 hours a large silvery fish jumped, hitting Mark, who was sitting out, before falling back. I remember hearing about a similar fish jumping over a friend's canoe in Poole Harbour, perhaps there is some connection! We had to tack, which meant we went aground on the mud at the







end of most tacks until we reached the actual river where it was easier sailing. We were passed by a few other boats using the tide. After passing Ridge Marina we saw another Mirror and exchanged greetings with her all female crew!

At 11.00 hours we arrived at Wareham, a popular little town with a busy quay, a restaurant beside the water and a graceful three arched bridge. We were quite pleased with the time of our passage in unfamiliar water. As there was no room alongside the quay we lowered the sails and mast before rowing under the bridge to explore up the river which is little used and winds through water meadows. We ate our lunch here before returning through the bridge where we rehoisted the mast and sails to spend an hour sailing up and down a quiet reach between reed beds. On returning we found a place at the quay and removed the sails, spars and emptied the boat, piling up the equipment at the edge of the car park by the quay. The car arrived and was loaded. We then rowed under the bridge to a slipway where the boat was pulled out on her trolley and lifted onto the roofrack. We left Wareham at 15.00 hours.

We found that during the holiday we had travelled about forty miles by water and had learnt a lot about a new type of sailing. We very quickly learnt to take advantage of the tides, not to fight against them, and to take immediate action on running aground. We calculated that the overall cost of the holiday came to about £4.00 including launching fees and petrol used in travelling.

To anyone planning a similar trip I would strongly recommend taking some long warps, a good anchor, fenders, oilskins and possibly wetsuits. On running aground, as you undoubtedly will, do not hesitate to grab oars or a jib boom and push hard using the jib to pull her head round and if necessary even jumping in to push off. The mud will only be a few feet deep with stones underneath. Also very important, get some tide tables and some sort of chart which should be used as often as possible.

Finally our thanks are due to our respective parents, without whom nothing could have been done and to various friends who gave advice and recommendations. We both enjoyed the holiday immensely and if this is of any use to anyone planning a similar holiday we will have achieved even more.



# PRACTICAL HINTS FOR CRUISERS

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## On the subject of trailing

by Frank Webb

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Insurance companies have had to deal with an increasing number of claims for damage to Mirror dinghies. Not only, as might be expected, from sailing but from damage whilst being towed. Again not, as you may think, by cars running into them but from simply not being properly adjusted on the trailer itself. Perhaps these few hints may assist the owner contemplating changing to a trailer, or may even help explain some odd looking damage to existing trailed boats.

Most trailers when purchased are intended for universal application, and therefore require some alteration or at least adjustment before suiting the Mirror. Even trailers advertised as suitable for a Mirror are not always that and some cannot be made so without quite drastic additions. If we consider the basic requirements, then any trailer can be examined for its suitability.

Firstly, the weight of the boat, plus mast, plus what some camping families load into the boat, should not greatly exceed 200 lbs. It is better to have the correct springing than to do as has been done, lower the tyre pressure to give a smoother ride. This can damage the tyre, so aim for a trailer of about this loading whatever type of suspension your pocket will let you choose.

Secondly, the support for the boat should be on the keel in at least two places, sensibly apart, with the two steadies adjusted so that when the boat is correctly supported forward and aft, they prevent it from rocking from side to side but are not contributing to supporting the boat directly. Whilst talking

of the steadies, some are adjustable, some floating and some seized up, so have a good look to ensure that they are properly protected by a rubber or similar material and in the case of the Mirror they often lie across the bilge strip, causing one edge, however well protected, to dig in. It is better, if you can, to remove the existing steady and replace it by a larger flat custom-made one that is well protected and avoids sitting unevenly on the bottom of the boat. You should also make sure that the keel supports are of a suitable material and if they swivel, by design or accident, that they are correctly positioned before you set out.

Thirdly, securing the boat to the trailer. Everyone to their own design is fair comment, for what appears to satisfy one owner will not satisfy another. Again, basic requirements are best considered: (a) we want to stop the boat going forward; (b) to stop it sliding back; and (c) to stop it bouncing up and down.

The forward and aft ties should be of rope (old sheets are very kind to your boat and your hands). The forward one can be taken from the forestay eye to a point aft of this on the trailer's backbone. The aft one can be taken from the cross member of the trailer, through the hole in the skeg to the other side of the cross member. The tie-down straps can, of course, vary in material from rope to sophisticated quick coupling, spring-loaded webbing. This is a matter again for you and your pocket to choose, so long as the boat is kept in close contact forward and aft with the trailer. Two ties would be best for this, one at the cross member and another forward.

The stowage of the mast, gaff and boom is really one of individual choice, but a useful idea is to make a support that holds them along the centre of the boat, just a little higher (say four inches) than the transoms, so that if you trail with a cover on or park



your boat outside, it will make a ridge and allow the water to run off as well as preventing chaffing against themselves or the decks.

On the question of covers, it depends on how particular you are on keeping your hull free of stone chips, etc., when you are travelling. If you are a keen racer or perhaps a perfectionist, you may wish to use a hull cover (under-cover) but it does mean some extra lifting.

Finally, before every trip it is vital that the hitch is inspected to ensure that there is no obstruction in the cup and this includes old hard grease. Check the locking device works and when it is on the ball that it is secure. Attach the electrics and you are

ready for the off. A good plan is to take the long way round to the driver's seat and check all that has been mentioned is in order. This simple procedure can easily be repeated at any stops en route with advantage.

On the question of the law in respect of trailers, it is not the subject of this article, but again it obviously pays to read the law and comply with all its requirements. Perhaps all that is required to reduce the increase in insurance claims for damage by the trailer is a little common sense, it can avoid a frustrating time trying to repair some awkward damage and maybe help keep our insurance premiums down. Let us, as Mirror owners, take these few sensible precautions.





# Towing for two-boat-families

by Jack White

With the increase in the number of Mirror dinghies being purchased and sailed, there are a large number of families with more than one dinghy. I have, therefore, devised the following system for stowing two dinghies onto one trailer. This system has been tested for several years, sometimes at speeds far in excess of the towing limit of 50 m.p.h., with great success.

Materials required are:—

2 pieces of softwood 150mm x 75mm x 30mm; 4 pieces of softwood 280mm x 150mm x 25mm; 2 pieces of softwood 950mm x 38mm x 12mm; 1 piece plywood 1.225m x 150mm x 5mm; 20 x 2in. No. 10 countersunk galvanised wood screws; 8 x 1½in. No. 10 countersunk galvanised wood screws; 8 x ¾in. No. 6 countersunk wood screws.

First of all, take the first two items of timber, separate them into two sets, i.e. 1 piece of wood 150mm x 75mm x 30mm and two pieces 280mm x 150mm x 25mm in each set. Take each set separately, screw

and glue them together using one shot glue and the 2in. No. 10 wood screws, making sure that the grain of the smaller piece of timber is at right angles to the grain of the other pieces. Five screws from each side countersunk into the timber will be sufficient. These pieces of wood should now form an 'H' shaped frame as fig 1.

Take the piece of plywood and the two pieces of timber remaining to make up the numberplate board. Screw and glue the battens to the long edges of the plywood panel to act as stiffeners, making sure that they are fixed an equal distance from each end of the panel of plywood. Then take the number plate board and fix it with the 1½in. No. 10 wood screws to the frames that you have previously made, making sure that the overall outside dimension of the two frames is exactly 840mm. This is an important dimension, as you will later realise. You should now have the main frame made up as in fig 2.

The number plate, lights, reflectors and 50 m.p.h. signs can be fitted to the front of the number plate board and wired up to suit your towing socket, leaving sufficient wire to reach from the transom of the dinghy to the socket of the car with, maybe, a foot to spare.

When it comes to stowing the dinghies onto the trailer, you must be sure that your trailer is capable of carrying the load that you are going to put on it, which with the masts, booms, gaffs, tillers, centreplates, possibly wetsuit and sailbags, not to mention the boat covers, spinnaker poles and launching trolleys, must weigh somewhere in the region of 350lbs, at least.

Place the first dinghy onto the trailer in the position that it is to be carried and lay within the cockpit such things as centre-

Fig 1

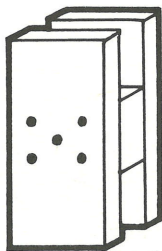
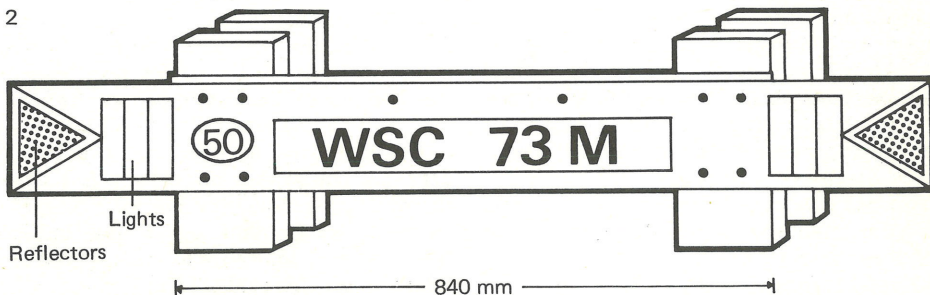


Fig 2





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# Outboard bound

by Percy Blandford

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There are occasions when you do not want to sail and the idea of expending energy on rowing does not appeal to you. It may be that there is no wind in any case, or you have to buck a foul tide faster than you can sail if you are to get home that day. Which brings us to an outboard motor.

Any hull has an optimum speed, which is based on waterline length more than anything else. You will go faster if a good length of the boat is immersed than if the hull is down at the stern and a yard or so of the bow is sticking up in the air. This may be obvious when sailing, but is just as important under power — yet how many dinghies may be seen with the crew sitting beside the motor and peering around the raised bow?

There is little point in using a motor more powerful than is needed to push the hull at its optimum speed. Any greater power will cause a great flurry of water astern, pull the stern down and give only marginally greater speed. The only way to go really faster is to use enough power to make the boat plane — structurally the Mirror will not stand up to the thrust of a high-powered motor, so do not try that.

The power needed to drive a standard Mirror at all the speed it can cope with is quite slight. For most purposes 1 HP will probably do. If you want to load it heavily then something like 2½ HP is the most that can usefully be employed. Different makers seem to use different horses, so powers vary a little between makers, but these are a general guide.

Motors are described as long-shaft and short or standard-shaft. This applies to the depth of transom. The short shaft fits a transom not more than 15in. from its top to the bottom or keel. The Mirror transom is less than this. To avoid rudder hangings the motor goes to one side, so the effective depth at the motor position is less than at the centre. It does not matter much if the motor projects well below the hull, but there have been a few motors produced with shorter shaft than 15in.

plates, tillers, sailbags, spinnaker poles, wet-suits and boat covers, spreading them out as much as possible to distribute the load. Take the two masts one at a time, fitting the base of the mast into the rear of the dinghy under the transom knee, the tops of the masts will then pass under the plywood corner piece at the forward bows and remain fairly secure. Rest the tops of the masts onto a small piece of sponge or carpet on the forward deck. When both masts have been stowed you can position the number plate board, sliding the 'H' shaped pieces over the transom of the dinghy. Here is where you will notice the importance of the dimension outside of the two frames, as these must fit snugly between the two knees of the transom, in order to prevent any sideways movement of the second dinghy.

However, assuming that the frame fits, you load the gaffs and booms, resting each end onto small pieces of carpet, and lash the centres down to the thwart. Securely lash the dinghy to the trailer, ensuring that there is no sideways or forward/backward movement. At the same time it is a good idea to check that all the spars and equipment have been loaded, as this is the last time that you will be able to see inside the dinghy before you reach your destination. Also, remember to lay your electrical cable from the lights along the deck of the dinghy, bringing it over the gunwale, approximately one foot back from the stem of the dinghy and into the socket of the car.

You need a small piece of carpet about eighteen inches by six inches to lay across the bows of the dinghy. Invert the second dinghy and lift it onto the first dinghy, ensuring that the transom fits into the upper slots of the 'H' pieces of the frame. Resting the bows onto the bows of the first dinghy, lash the two dinghies together by using the two forward towing eyes and by the shroud plates or chain plates. You can, if you wish, invert your launching trolleys and load them onto the top, securely lashing them to either the top dinghy or to the trailer.

You are now ready for the road and will find your load safe and secure when you reach your destination.

"Happy trailing."



The thrust obviously comes at the propeller, but the effect on the transom is to apply a twisting action, forward at the bottom and outward at the top. This has to be resisted by the structure of the transom. The motor applies the load via a bearing plate against the outside of the transom and one or two cramp screws at the top. Most cramps open wider than the thickness of the transom and it is a good idea, if you intend to do much motoring, to arrange to spread the load.

There can be an extra thickness of plywood outside, larger than the outboard bearing surface, and a strip of wood across the inside of the transom for the cramp screws to bear on. These pieces can be fixed but it is a good idea to have two suitable pieces linked by a rubberised fabric piece that goes over the top of the transom. This can be removed and prevents the transom being marked by the motor.

Which side you have the motor depends on which hand you prefer to steer with, but do not go too far away from the centre. Most motors have an adjustment of angle on the motor bracket. The motor drives best when the shaft is vertical. The adjustment is to suit different transom angles. A few motors do not adjust nearer than  $15^{\circ}$  to vertical. On the vertical transom of a Mirror this would leave the motor out at a slight angle, which would not matter much, but if you can choose a motor that goes right in to suit, that would be better.

All small outboard motors are single-cylinder two-strokes. Some are water-cooled and some are air-cooled. The former is supposed to be quieter, but in the sizes we are considering there is little to choose in noise level — you have to accept the high-pitched two-stroke buzzing. The fuel tank is mounted on the engine and you have to follow the maker's recommendations fairly closely about mixing oil and petrol. A modern motor is fairly trouble free if you watch this.

Most motors can be propped at an angle to clear the water so it is possible to sail with a motor in position. However, you may want to stow it in the boat. The fuel tank can be sealed and fuel turned off, but the carburettor may trickle annoyingly when

the motor is placed on its side. To avoid this problem, the motor should be stopped by turning off the fuel and letting it idle until the carburettor has emptied.

It is good practice to never lift the underwater unit above the power head. There could be a risk of water finding its way into the works. Some small motors are adaptations of lawn mower motors, often with no marinization. With careful use on inland waters they may have a reasonable life, but on salt water they soon suffer from rust. An outboard motor built as such is usually a better buy.

Small outboard motors have no clutch. This means that as soon as the motor starts, it is driving the boat. This is not as frightening as it seems, as the thrust is slight at idling speeds and the boat can be easily held. Many motors reverse by turning completely in their mounting — this is also your only brake!

Most outboard motors have recoil cord starters. British Seagull, probably the most popular small motor, has a loose starter cord, so take care not to lose it.

You do not need to be an engineer to run an outboard motor, but there are two things you should know how to tackle and always have the tools needed for these jobs with you. The solitary sparking plug can become fouled and cease to function, so the motor stops. Have a spare plug and a suitable spanner with you. A fouled plug is better cleaned with the equipment at a garage than by hand tools. Most propellers drive through a shear pin, which breaks and protects the mechanism if the propeller hits anything solid in the water. In many cases the propeller nut is locked by a split pin, so have a dummy run on your engine, and see how to remove the propeller and fit a new shear pin, before being faced with the job afloat.

At one time sailing men professed to hate engines and were rather proud of neglecting it, if they had one. This is a rather negative attitude. Mirror sailors are much more enlightened seamen, we hope. An outboard motor can be a useful part of your equipment, deserving about the same amount of care you give your sails.



# The Iron Topsail

by Peter Booth

Down sail, up funnel; for a decade or so an order heard on warships and merchantmen. To use the iron topsail was an expression for switching from sail to power, but rarely were the auxiliary engines a success in sailing ships. The engines were inefficient, required boiler and bunker space within hulls designed to the finest lines possible, the paddles or propellers caused drag which was unacceptable and the crew hated the innovation.

The advantages were the same then as now. A sailing ship, down tide and to leeward of its landfall, should have been enabled to catch her tide, clear a dreaded lee shore or cross the doldrums trade wind to trade wind, had the machinery been efficient. When there was a breeze, of course she had no need of it.

The obvious answer, when pleasure sailing, is to take an outboard and these days they are not the encumbrance they used to be. Let us try to define the range within which you may seek the ideal engine for yourself. We can postulate an upper limit of power at 4 H.P. and a lower limit at 1½ H.P. Price is a consideration but not the sole consideration and £80 – £150, including V.A.T., covers almost any suitable make. Clearly the lighter the better but be warned, the lighter and smaller the engine, the more likely will be the necessity to work very

strictly to the manual.

To exemplify, the British Seagull engine, traditional standby of the practical yachtsman, is simple, adequately powered and although it should not be so subjected, capable of withstanding a great deal of misuse. Its simplicity of design plus its spare power achieves this but it is not the lightest of engines. The smallest and lightest engine of all, will give endless satisfaction provided the petrol/oil mixture is absolutely accurate, and it is operated in accordance with instructions. You pay your money and takes your choice!

The weight factor is very important and again the range is wide. From 11½lbs (5kg) to 30lbs (15kg) or so. Thirty pounds in the wrong position can affect the trim badly and it takes a lot of carrying home in these days when outboards can no longer be left overnight safely. But weight tends to denote power. Obviously an 11½lb engine is nearly three times more attractive than a 30lb engine, particularly as an outboard is a tolerated nuisance for 90% of its life, but in a fast tide, head sea and heavily crewed Mirror, it may not give quite enough power to push you home.

It would be wrong to list the engines available and draw comparisons, for you must study not the other man's needs but your own. The ideal of course, is the least weight, at the cheapest cost, for the greatest reliability, with the maximum power and minimal noise and vibration. It's not yet on the market and it is hard to see how it ever can be.

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Ask yourself some key questions – adding up a score may narrow the field a little.

|                                       |                 |               |                    |
|---------------------------------------|-----------------|---------------|--------------------|
| Is your normal crew                   | 1. Heavy        | 2. Moderate   | 3. Light           |
| Are the prevailing conditions         | 1. Exposed      | 2. Average    | 3. Sheltered       |
| Do you want an engine as              | 1. Prime power  | 2. 50/50      | 3. To get you home |
| Your mechanical aptitude is           | 1. Nil          | 2. Average    | 3. Good            |
| The carrying distance is              | 1. Short        | 2. Medium     | 3. Far             |
| Have you also a dinghy which is       | 1. Heavier      | 2. The same   | 3. Lighter         |
| Will you take the engine              | 1. Occasionally | 2. Sometimes  | 3. Nearly always   |
| Space in your boot                    | 1. Lots         | 2. Some space | 3. Very little     |
| Will you allow the children to use it | 1. Rarely       | 2. Sometimes  | 3. Often           |

A high score would seem very roughly to indicate the range 1/2 H.P. weight up to 20lbs (10 kgs)

An average score leaves the whole range open.

A low score calls for study of the heavier, higher powered and very simple engines.

But – it is not conclusive. So above all, seek demonstrations, observe other users and talk it over with your fellow owners.



# Joys of outboarding

by Peter Marks

Most Mirror owners wish at one time or another that we had a small outboard motor on the transom; to get us home against a strong ebb; to spin for mackerel, or showing even greater wishful thinking, to get us back to the front of a racing fleet, having yet again misjudged a wind-shift!

Cost has always been something of a barrier to those who would only make very occasional use of their motor, but with the cheaper ones at only half the price of a Mirror kit, they too represent a very good investment.

On the market there is a bewildering selection of smaller outboards, some excellent, some very mediocre. The old favorite must be the Seagull Featherweight or, giving rather more power, the Seagull Forty Plus. These are probably the most reliable and long-lived motors in the world, are among the least expensive and require the minimum of maintenance. At a price of around £80 plus VAT in the UK one can afford to overlook some of its shortcomings in not having recoil starting (the cord has to be wound onto the pulley) and not having the reversing ability by pivoting through 360° as on most other motors.

For those prepared to spend rather more to obtain the benefits of the features now found on the products of the larger manufacturers, one cannot go far wrong with the little 3.5 Yamaha, the 4hp Johnson/Evinrude or what to my mind must be the best buy at a price of around £170 plus VAT — the new Mercury 4. This superb piece of engineering, completely new for 1976, weighs in at just 36lbs (16.3 kilos), has recoil starting, 360° pivot reverse, integral fuel tank, twin cylinders, a clutch giving a neutral position in the gearbox, a system whereby the exhaust gases and noise are ejected through the centre of the propeller for fume-free and quieter running, a blissful absence of those infuriating shear pins that most makes use to protect their propellers and last but

certainly not least, Thunderbolt ignition that requires no contact-breaker points and uses a special type of sparkplug that does not have a conventional central electrode gap. It is these last two features that raise the Mercury head and shoulders above its competitors, as they have virtually eliminated the old bugbear of oiled or fouled sparkplugs with the attendant bad starting that has put so many people off owning an outboard in the past.

All these small outboards are simplicity itself to operate with just a choke and throttle by way of controls, and are held on the transom with two thumb screws. The more prudent of us would attach a lanyard from the motor to an eye plate on the transom just in case the clamps vibrate loose (a euphemism for the skipper having forgotten to screw them up in the first instance!) and to protect that rather fine piece of mahogany from unsightly scores we would screw a piece of metal plate to the transom.

The position that the motor should take up on the transom is open to debate. Ideally, it should be dead centre but this is not usually possible as the rudder gudgeon and pintles foul the motor's clamp bracket and we have to compromise by offsetting it to one side. In this position we have to accept that the Mirror's skeg interferes with the flow of water to the propeller and results in a much larger turning circle in one direction than the other. We have of course removed the boat's rudder and are using the motor tiller to steer, but another system which has some advantages is to retain the normal rudder, set the motor as far to one side as it will go on the transom in the straight ahead position and then use the Mirror's own tiller. Using this method, one can trim the boat correctly by sitting well forward and furthermore one has far better control at low speed, especially when the motor is switched off just prior to coming alongside or onto the beach, since without the thrust from the propeller one would have no steering at all. A word of warning though, too much 'hard a' port' and you may well chop your rudder off!

Remember to take a spare can of ready mixed petrol/oil and a small funnel — it is a cartoonist's dream to see someone trying to



decant fuel into the tank via the tiny filler cap in a bit of a lop. 'Pouring oil onto troubled waters' takes on a whole new meaning! Other essential items are a couple of paddles, a spare sparkplug and for those who do not have a Mercury, a handful of shear pins. Lastly, to avoid mutiny, if you intend doing much outboarding, make up a short, dummy daggerboard that is a nice tight fit in the centreboard case. Failure to supply this will result in a very impressive fountain of water landing in your crew's lap.

## Further joys of outboarding

by Tony Hutchings

I first read Peter Marks' article whilst deeply immersed — if that is the correct term — in applying the final coats of polyurethane to M31765 in the month before the grand launch. His ideas about the joys of outboarding seemed rather remote, what with all the arrangements concerning paint, trailer, tow bar, registration, and the right champagne for the job!

However, after a 'getting to know you' six months under sail only, I soon came to the conclusion that the Mirror is the type of boat that needs exploiting to the full. The joys of outboarding were discussed again and Peter's article re-read in light of experience and possible requirements.

Picture the scene shortly afterwards . . . the helmsman steadies the Seagull 40 with one hand, instruction book in the other. Turn to face transom, pick up motor for the n'th time, and attach to the transom via the motor bracket. But where shall I put it? Shout for the crew to bring help and Reflections No. 5 open at page seven. Ah! confirmation of a suspicion, 'ideally the motor should be in the centre position but this is difficult to achieve as the gudgeon and pintle tend to foul the clamp bracket.' As I don't fancy the alternative rudder-chopping position we are now back at stage one.

Perhaps if we go right back to the drawing board an idea might come. So, swapping helmsman's woolly bobble hat for whatever marine architects wear aloft when feeling

creative, away we go. A look at the engine mounting bracket for the Seagull (and some other motors) will reveal that there is enough clearance in the centre for the gudgeon and pintle to protrude when set central and some ½in. (13mm) away from the transom. If a piece of mahogany is made up to take the pressure from the two upper mounting points and the lower thrust pad on the one side of the transom, and the two thumb screws on the other, we might be getting somewhere. How to get such a clamping pad on the transom and over the rudder attachments is the chief difficulty. This problem was solved by having the clamping pads in two parts, secured when in the correct position by screws. Eureka! Now all we need is to get from the drawing board to the real thing.

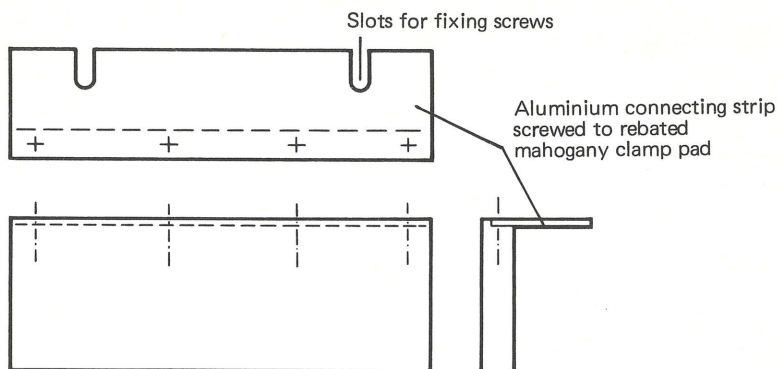
Some time later . . . trials over the season proved most satisfactory. Having the engine on the centre line of the hull is ideal and well worth the effort. The clamping pad is simple to attach, easy to remove and no marks are left on the transom to show that an outboard has been in use. (This point should be noted by those whose friends are sailing purists, and race committees who are suspicious of the last seeming to come first!)

Although the pad was developed with the Seagull 40 in mind, adaptations of the idea may well suit other motors.

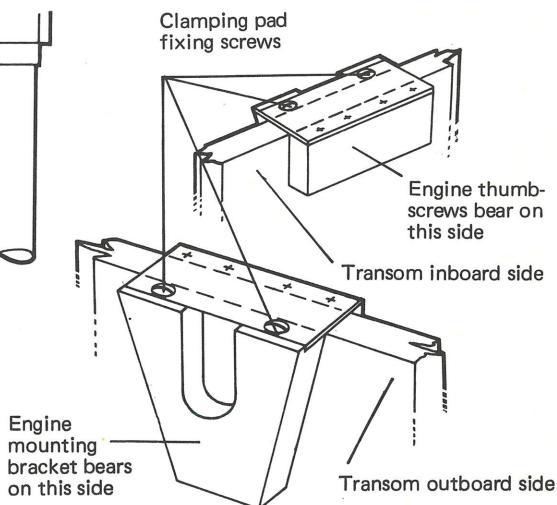
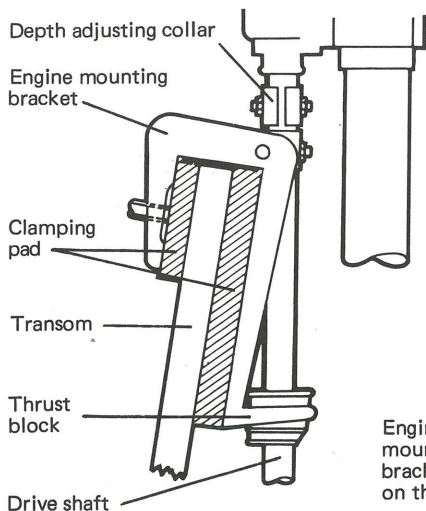
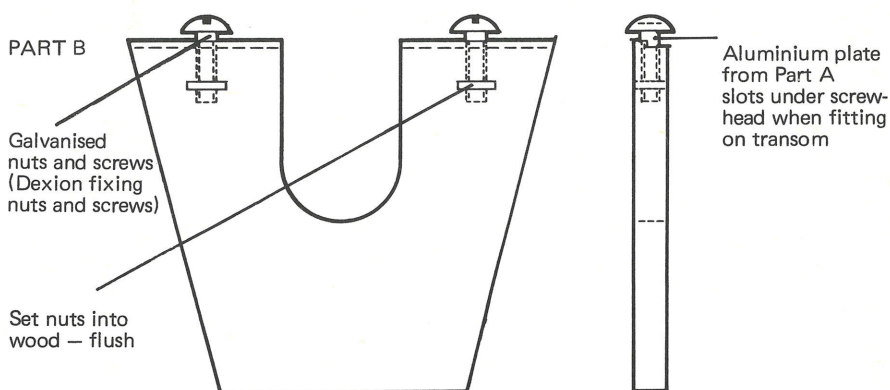




# PART A



# PART B





# The Mirror and its engine – abroad

by Hugh Cundall

By the time the summer holidays arrived, I had already waged a long campaign – constant dripping weareth away the stone – to overcome the distaff objections, and when we set off ‘en famille’ to caravan in Brittany for the second year running, we had the Mirror on top of our old Victor estate – and a launching trolley on top of the Mirror.

*First tip* – do have an Estate. I lash my spars into the Mirror, and because the roof rack is right at the back of the car, I can have the Mirror on top of the car and securely lashed in 10 minutes flat, *single handed*. You can’t do that with many other boats.

We chose the Saturday mid-day ferry to Cherbourg, on which you do not pay extra for height – then missed it due to the traffic jams. So we took the next one to Le Havre instead. Who said you have to book the ferries months in advance?

At Le Havre a rather boot-faced Customs man asked if we had an engine for the boat, and all unsuspecting we said yes, it’s a 1½hp Evinrude, 5 years old, in the boot of the car under the clothes, camping gear etc. “Can I have your carnet?” he said. “What carnet?” we said.

*Second tip* – Caravans and boats can be imported free, but any sort of engine needs a carnet.

“How do we get one?” we said. Leave the engine in the Thoresen freight shed over night, and go to the AA office in the morning and get a carnet.

But we don’t belong to the AA. Can we pay the duty – the engine’s only worth £15 at the outside? No, you can’t (Question – I wonder why he was so keen for us to go to the AA? What nasty suspicious minds we have!)

But it’s Sunday to-morrow. The AA office is open in the morning.

So we and another car/caravan/boat equipe in an identical fix, slept over-night in the car

park of the local Club Nautique (where it said “No Camping”) and waited until 9 a.m. when we thought the AA might be open.

*Third Tip* – The AA office in Le Havre is open from 7-12 (from memory) on Sundays, so we need not have wasted that much of the day.

So it cost us £10 to get the silly little engine into France.

*Fourth Tip* – Get a carnet in England.

After that inauspicious start, all went well. We used the Mirror a lot in Port Mer bay near Cancale – the kids learned to row and did some sailing – it was used as a tender to a ‘Galion’ cruiser owned by some French friends – and the cruiser owner and I went for a long and delightful ‘cruise’ round the coast in the Mirror one afternoon.

One Mirror writer recommended contacting the local Mirror Association before going abroad. I tried this, both using the address in the Yearbook and through our indefatigable Secretary, only to find that the French Association is apparently moribund. (*Editor’s Note. The French MCA is now once more a flourishing concern.*) In one way this was a relief, as I was already dreading the campaign I would have had to plan and execute in order to arrive, ‘fortuitously’, at a Mirror regatta at the right time, so that “well darling, now we are here, it’s silly not to take part . . .” As it was, without regattas, life was much simpler!

Our good Secretary recommended that we should visit Crozon on our way to Concarneau and our French friends also said how attractive it is. Whilst we were pleased to have been there, the camp site was several miles from the water, and the harbour did not look very exciting. Frankly, we were disappointed, and only stayed one night.

Concarneau, on the other hand, was a fantastic success. We found a field where we could make ‘le Camping sauvage,’ across the other side of the bay, and we used the Mirror to sail the 2 miles to the town centre for shopping! We did get a few curious glances as we entered the harbour – not surprising. I suppose, at the sight of a funny little, stunted, sawn-off boat, containing 2 adults (one 6ft 2½in!), 3 children (15 down to 9), an out-board motor (stowed in the bilge just in case the wind dropped), a week’s washing, all the shopping etc. And for some reason



I shall never understand, it sailed straight up to a 15ft high harbour wall, against an offshore wind. The Gods were certainly smiling on us.

We also used the Mirror for pottering – did you know the foredeck makes a perfect place for the owner's wife to sunbathe, if you steer so that the sun is not behind the sails? – and for teaching the young to sail, and for fishing.



We saw one other Mirror there, but he was using his outboard . . .

In the end, I think we all agreed that taking the Mirror along had been a great success. For me, of course, it had made all the difference. I could combine a sailing holiday with what the non-sailing parts of the family wanted to do.

On leaving Cherbourg on the way home, the Douanier asked “did we have an engine” and “could he have the carnet.”

*Fifth Tip* – Maybe honesty is the best policy – if we had said “No” on the way in, we would have had to lie again on the way out – and we would have had kittens the whole holiday dreading the customs on the way out.

*Sixth Tip* – If you are going to all that trouble, make sure the damn thing works – insofar as one can do this with an outboard. We had water circulation problems half the time.

Nevertheless the little Mirror is a fantastic boat, and I know of no other that would be anywhere near as useful and attractive for this sort of activity. And, as I am always telling my 9 year old crew, Mirrors do not capsize – unless – but that is another story.

## In praise of (a) sail

by Laurie Jones

Sitting with the wind howling around the house and the rain lashing the windows, reminds me of our last holiday with the Mirror in Cornwall. It was just such a day when I realised how easily things can go wrong. We were staying at Place Manor, a beautiful sheltered spot almost opposite St. Mawes on the Percueil River. It was a particularly blowy day and we had not been sailing. Martin, aged 6, wanted to go for a row and to sail his toy yacht. The westerly wind was blowing strongly across the entrance to Place, against the ebb, which had just started to run. We cleared the boom and mainsail of the Mirror, but I thought to throw the jib into the stowage locker, just in case, and I also retained the centreboard. Just as well!

Martin's boat sailed bravely out into the rough water and had nearly reached the St. Mawes shore, when it went about and headed back towards Place. Almost across the fairway it went about again and we decided to rescue it. I misjudged the approach and ran it down. Martin almost went overboard trying to grab it, and I grabbed him, only to find one oar bobbing away upwind. The toy yacht sailed gamely on!

It took four or five minutes to extract the jib and hoist it, and about half an hour to beat back to the place where we lost the oar. There was, of course, little chance of finding it. Would it go with the ebb, still rather weak, or be wind blown up river? Anyway we found the yacht, now nearly back to St. Mawes, and managed to retrieve that. While all this was going on under grey lowering skies, a helicopter came and took a good look; comforting really. There was no hope of finding the oar – Martin was getting cold, and trying to make a Mirror go to windward under jib alone is rather a slow business, especially when it comes to tacking. The solution is to bear off and get some way on, free the sheet, luff up smartly, raise the centreboard, back the jib and reverse the helm. The boat backs round on the rudder, making a short stern-



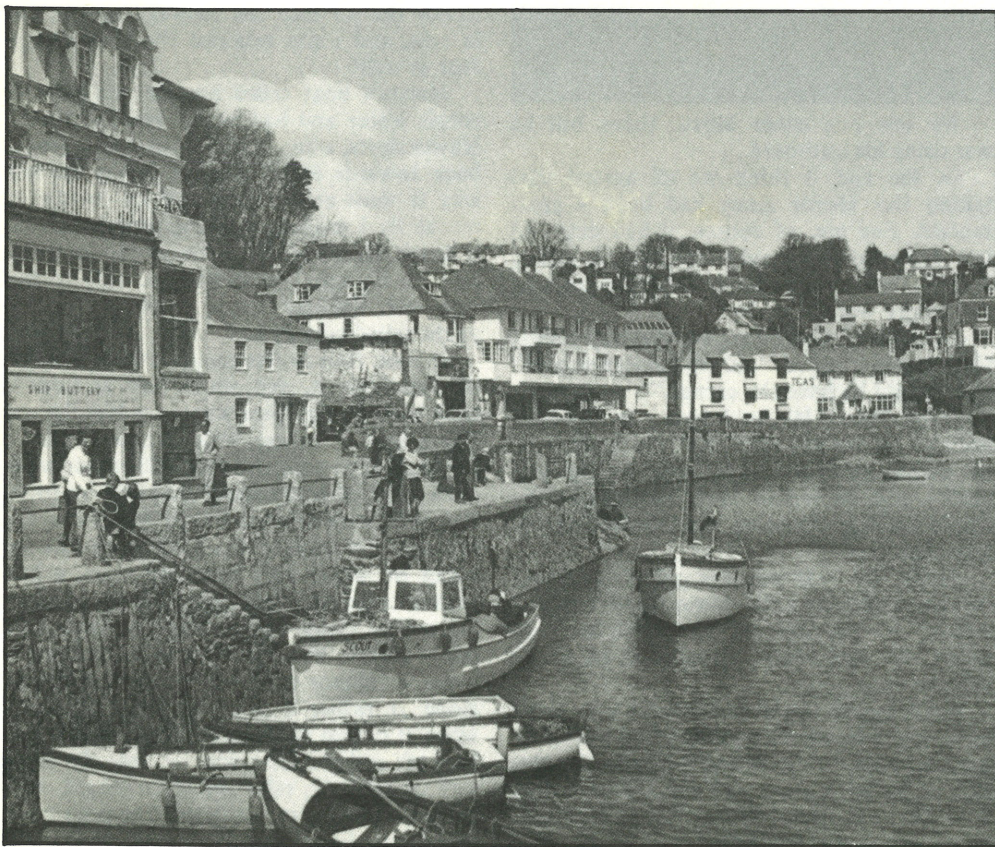
board. Then you can put the board down, sheet the jib across, and off on the new tack. But we weren't making much progress towards Place, so I put Martin ashore at a landing from which he could walk home, while I re-rigged the jib on the main halyard, and tacked it down with the kicking strap, taking one sheet through each of the drainage ports on the transom. After that, progress was reasonably rapid, the boat was well balanced and handled well. Later we borrowed an outboard and went looking for the missing oar. It was quite fruitless, of course, but surprisingly, with the motor flat out and a lot of wet coming over the front, we found that our little Holt-Allen bailer would not suck. Yet, under sail, it will dry the boat out, even when going to windward. It's amazing how efficient sails are in getting a boat through water.

The afternoon's events brought home how helpless one is with an oar missing in any

sort of a chop. A sculling notch in the transom would be a big help but I haven't dared cut one in case it puts us 'out of class.'

In future I shall certainly always carry a rag of sail and retain the centreboard. They saved our bacon that afternoon. Apart from that incident, the holiday was a great success, and I can thoroughly recommend the Falmouth area as a place for Mirror sailing, and Place Manor at St. Anthony as an ideal base.

Finally, on a visit to Sweden (without any boats) I saw a neat method of stowing oars, which I have found most satisfactory but have not seen used in this country. The oars are passed, blade first, under the thwart, one on each side of the plate case. The blades fit into the stowage lockers, and stay vertical when the oars are lashed together with elastic cords fore and aft of the plate case. The oars are quite out of the way and can be used instead of toe-straps.





# Cats

by Ean McDonald

*"... les mouvements des équipiers (the crew) doivent avoir la promptitude et la souplesse de ceux d'un chat..."*

I came across this in the Touring Club de France sailing school manual which I was using to coach four young Dutchmen in French sailing terms. They had been taken on as assistant instructors for the T.C.F.'s July sailing courses that year. Like most of their nationality, they were good sailors and their English was fluent, but even their every day French was somewhat inadequate. French pupils instructed by Dutchmen who had had their French sailing jargon imparted to them with a Scots accent! I wish I could have stayed on to see some of the results...

However, the object of this article is to offer some wrinkles to any who, like myself, find by reason of advancing years or any other reason, that their ability is short of cat-like. I suppose that the best advice to them would be to buy a small cruiser. But this is a little heavy to make passages across France on the roof of an ancient van, particularly one whose compass courses are hopelessly deviated by the magnetic attraction of the *Massif Central* for the pilot.

The Bassin de Thau is a salt water lagoon, 12 miles by 2, behind the port of Sete in Languedoc. Thousands of plated oyster poles along its northern shore provide a guarantee of the purity of its warm water for those addicted — or prone — to total immersion, and provide an additional incentive to visit the inns of the one or two little harbours along its shores. Sete itself offers the lover of ships everything, and can be visited by a network of canals which put Venice to shame. The T.C.F. Centre Nautique at Balarue les Bains offers an excellent camp and caravan site, not restricted to club members or sailing pupils, except perhaps in July and early August, but prior enquiry from T.C.F., Bureau Regional, 4 rue de Verdun, Montpellier, is advisable. The centre has its own private slips and jetty.

Mirror 21831, 'Le Mirage' (dictionary

definition 'optical phenomenon, associated with water and/or with objects seen upside down') Bedford 'Vital Spark Too' and their owner have made the double passage from this, their port of registry, three times in the course of which they have involved themselves, severally and jointly, in numerous misadventures from being stranded at the source of the Loire, at 4000ft. to being blown across the Bassin under bare poles by the mistral, the strong north wind that whirls down from the Massif Central and the Maritime Alps. It is of maritime affairs that I would write.

## *Wrinkle No. 1:*

For the uncatlike the Mirror is delightfully easy to get out of from any position, provided you do not mind landing in water of any depth, with or without the boat on top of you. I had an uneasy feeling that getting back in solo, after righting her if necessary, might not be so simple. Being alone that year I thought that some experiments were called for, even if I *had* to be a lone wolf. I had no desire to sail the width, or at worst even the length, of the Bassin in the guise of an auxiliary and animate rudder. So I anchored her in chin-deep water and *tried*, over the transom, naturally. It *could* be done but the exercise was strenuous, and only achieved in a more or less unclad condition, after removing the rudder and more skin from various parts of my anatomy than I cared to make a habit of. Furthermore, judging from the comments of some small boys watching from shallower water, the performance must have been most undignified. National pride had to be considered.

Then I tried a stirrup bent to a line passed through one of the transom clearing holes, round the mid-ship thwart and back to hand. No good. The length of the stirrup 'leather' could certainly be adjusted, but as soon as any weight was put on it, it rode forward under the boat.

So — laugh who will — I have made myself a little ladder, designed to hook over the transom without removing the rudder. Any nosey parker seeing this stowed on the after thwart (but easily removable) will be told that it is a set of fiddles to prevent the beer and sandwiches being coupé into the bilges when I am lunching in a pople.



### *Wrinkle No. 2:*

An excellent way of achieving the total immersion above referred to, delightful in summer Med. waters, but undignified, is when coming alongside a jetty single handed and leaning outboard to get hold of something to which to pass a line. It can be positively ensured, if the free end of the bow line is lying where it should *not* be — at the forward end of the foredeck — and the lone mariner essays a perilous crawl along that no-man's-land.

With me in a Mirror there is no room for any extra clutter such as a boat-hook.

So I found me a piece of steel rod which would just fit into the D-eye at the middle of the spinnaker boom, bent about two inches at right angles and slipped this finger into the eye. Then I ran the rod along the boom and made another judicious bend to fit the rod into the claw at one boom end, taking care not to put pressure on the claw, and finished off with some kind of hook. Round off the two ends of the rod to avoid tearing sails or, better still, fit a small wooden parrel ball on the hook end. The fitment can be clamped into the boom in a moment or removed from it with a single tier of lacing line. Anyway, few uncatlike Mirror sailors will use their spinnaker single handed. The gadget is also useful when catting the anchor without venturing on to that perilous foredeck. You can grapple for the warp forward of the bow transom and drag it round and get your anchor on board opposite the mast without risking punching a hole in the bow transom.

### *Wrinkle No. 3:*

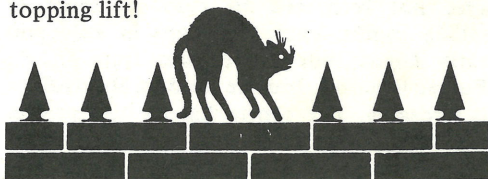
The Mirror's boom is doubtless admirably designed for its primary purpose. But with its weight and square section, and being so low hung at the clew, it is capable of inflicting some vicious swipes on the head and shoulders of the uncatlike helmsman when luffed, getting under weigh, bringing up, or at other moments when things are not strictly under control. In any case, it can be an infernal nuisance at such times, or when rowing.

As a most uncatlike small boat mariner I am not ashamed to admit that I carry oars and moreover keep them in their crutches, blades lying forwards against the shrouds so long as I am within soundings (dinghy soundings). Substantial collars at the top of

the leathers allow me to let them trail if need be.

But they would be of little use with that infernal boom flying backwards and forwards about a foot above the gunwale. So I rigged a topping-lift; bent on a small snap hook at the head of the gaff and spliced an eye into a length of light line (similar to that used for the luff lacing is ample). This line I rove through a transverse hole in the boom after end, thence to a jamming cleat about two feet forward on the side of the boom, and, *after checking that there was ample slack*, stopped off the end with a small parrel ball. Then I topped up the boom as high as it would conveniently go without straining the gooseneck fitting, cut the line, turned an eye splice into the lower end of the hanging part and spliced another snap hook into the part rove through the boom. This ensures that the hanging part of the lift can be fitted, if wanted, as the sail is hoisted, and removed as it is lowered. Carefully checked for ample slack it won't spoil the set of the leech. But you presumably don't want it racing (it may even contravene Class Rules) or with a crew on board, and if left bent will sooner or later produce a hurrah's nest with the main lowered, for which, if unbent, it provides a useful tier.

I once saw the late Uffa Fox, arriving late at a meeting, lash H.R.H.'s Bluebottle to a nasty jagged seawall railing with his mainsheet, while he went for sailing instructions, watched by the usual group of devotees — my pupils — whom I had recently instructed that a main sheet should be reserved for its primary purpose, not used as a sail tier, warp or whatnot. The Mirror's standard sheet gets kinky enough as it is after salt water use. With this topping lift, 'Le Mirage' even in her most intractable moods is reduced to absolute docility. I have sailed her through the worst of a mistral squall with the mainsail so scandalised. It is as well, of course, to remember to let go the kicking strap before topping up. It is of tougher cordage than the topping lift!





# Notes on a 65 mile weekend cruise

by Nick Lindsay



Earlier, we have told how three members of Wormit Boating Club sailed single handed, one June weekend, around Fife from the Forth Bridges to the Tay Bridges. We hope these notes will help anyone with a like venture in mind.

We were all brought up locally, and had a good knowledge of the coastline from the shore before we attempted our circumnavigation. There are quite long stretches of rocky shore where knowledge of sheltered beaches and harbour entrances is vital to planning.

The one inch Ordnance Survey map of Fife was our chart, but while under sail single handed in Mirrors 17552, 12476 and 38955, consulting a map is awkward to say the least. Pre-knowledge and visual memory are important. Previously, two of us had tried the trip around Fife, two up in 38955. We learned that 23 stones weight of crew,

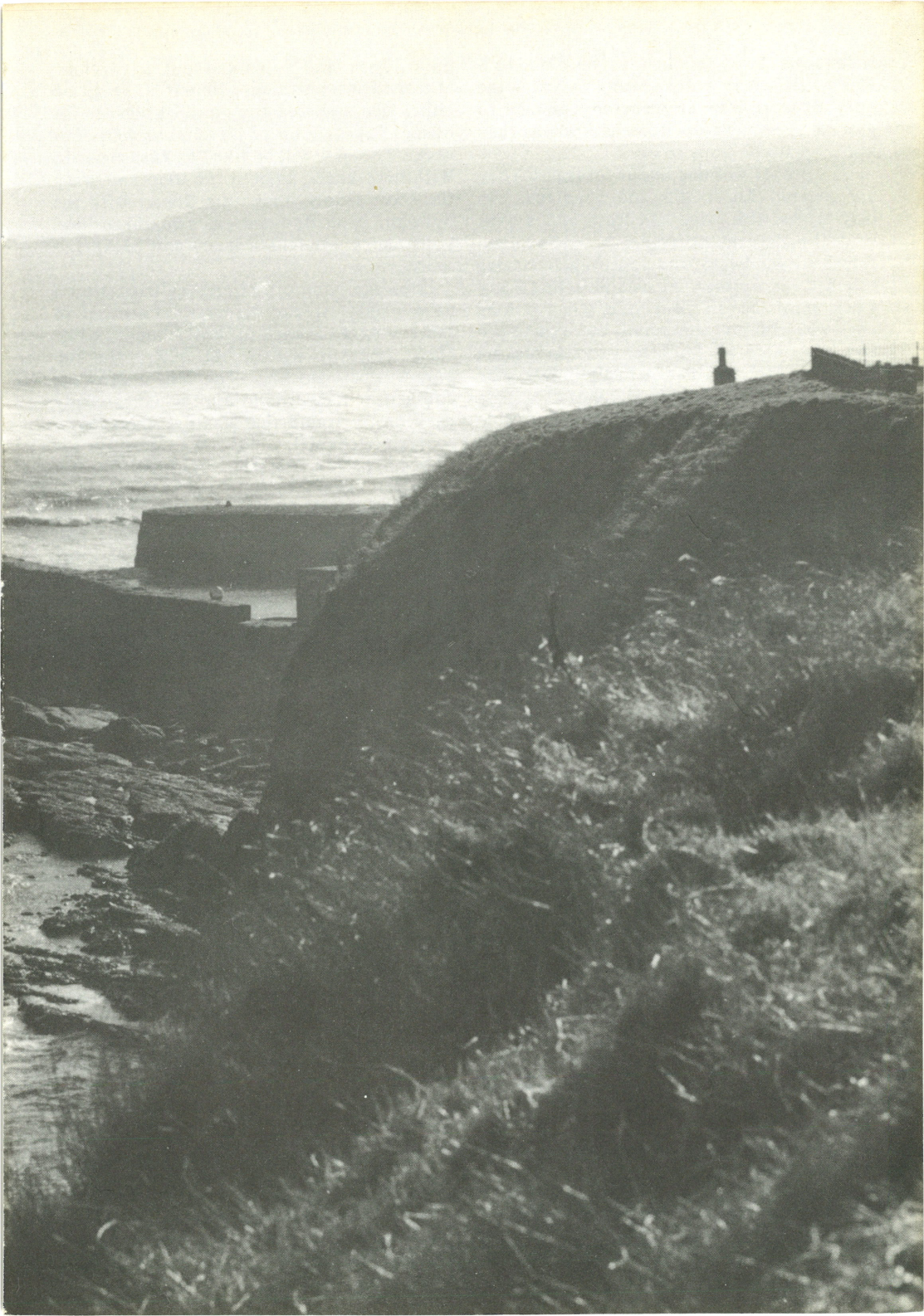
plus food, plus clothing, plus essential gear, adds up to an overloaded and very cramped Mirror — if we hadn't been overpowered by the weather, we might well have given up due to stiffness and fatigue. Our second valuable lesson on the 1973 attempt was our discovery of the invisibility of an orange painted Mirror under jib only. We had dropped the main when we were running before a force 6, and found ourselves broaching. We sailed some 15 miles under jib only, and although the coastguards and six friends were all on the lookout for us, the visibility was good, and we were no more than half a mile from the shore, **WE WERE NOT SEEN AT ALL.** The 1974 successful sail lasted 34 hours with breaks of 3½, 1 and 3½ hours. Comfort under sail was a big help in keeping going.

We carried our boat covers to serve two purposes. The main one was as a seating pad on the floor of the cockpit. When running, or broadreaching, we sat on these pads with legs stretched forwards, and, on port tack, with tillers extending past right ears. Our waistcoat type buoyancy aids acted as cushions for our ribs on the hard edges of the aft and side buoyancy tanks. Our weight was low, and, with gear stowed forward, the boat trim was reasonable. Anyone who has sailed single-handed on a run knows that sitting centrally on the thwart, twisted to look forward and at the same time with one arm aft to hold the tiller, is an uncomfortable position to maintain for long. We had nearly seven hours of running, so our 'armchair' forward facing position was a real ache-saver. The second use of our boat-covers was as bedding for the few hours we spent ashore. This was not so successful. A turn in our sleep and our ill-formed sleeping bags let in an icy blast. We all feel that the waistcoat type of personal buoyancy, already mentioned, is the safest type for single handed sailing. If you have ever tried to get back into a Mirror unaided, after a single handed tip, you will appreciate our point. Wearing a life jacket and 'carrying all before' like a pantomime duchess, you'll really struggle! Before going on a long coast-wise trip single handed, you should have practised getting into a Mirror over the transom, using a loop of mainsheet as a stirrup if necessary. A local phone call gets us the Met. Office at Leuchars, and we frequently check with them before sailing.











If you are lucky enough to be close to a Met. Office, it is worth getting to know the duty officers who are generally pleased to give a 'personalised' forecast when they know what you hope to do.

A word of warning about forecasts. They are **general**! Local hills and headlands can play tricks with wind direction and a shift of 45° makes the difference between a hard thrash to windward, and a fast reach. Having touched on weather, let us admit that Lady Luck must be on your side when a long coastwise cruise is attempted, but experience and judgement are important too, in making the best of the weather. A badly judged stop ashore could put the final landfall back a whole tide, or even make success impossible within the time available. One advantage of Mirror cruising is that if you do get stuck, a phone call can get you home by road. Have your radio pre-tuned to the shipping forecast frequency on Radio 2 (1500m) and seal it inside a loose polythene bag. You should be able to switch on and off through the bag, thus saving the risk of a wet radio. It can be done by touch during darkness. The safety points of buoyancy and radio lead naturally to other important items, such as a **damped** compass. A Sylva bearing compass is ideal and can be used at night. A powerful water-resistant torch and flares should be carried. Do remember that red flares should only be used in dire distress when life is in danger. White flares are all you'll ever hope to need. We were lucky enough to borrow an aerosol horn. The type commonly used for racing. In fog or darkness this might prevent being run down in a shipping lane. Each of us carried at least one knife, a whistle and sundry lengths of rope. It is an idea to stow lashings in two or three places. The forward shroud deadeyes are good fixing places. This emphasis on safety equipment does not mean that timidity is any part of coastwise sailing. Quite the opposite. Confidence, built on planning, preparation and practice, and the ability to cope with eventualities are the requirements for pleasure and success.

Our biggest safety measure of all was having 3 Mirrors working as a team, keeping in close touch and conferring when each tactical decision had to be made. Landings were easy as three people can carry a loaded Mirror without strain. As an aside at this

point, Jock and I worked out a two-man Mirror lifting technique. Here it is: Stand on either side and find the point of balance for lifting. Take a loop of jib sheet around your necks. The ends will be fixed by the fairleads. With bent knees, tighten the loop and grasp the sheet firmly under the thwart with the 'forward' hand. Buoyancy aids should cushion your necks. Straighten knees and backs and away you go.

Stowage is important on long trips. You'll need plenty of easy-to-eat food stowed so that it is easy-to-reach to satisfy hunger while afloat. 'First in will be last out' is the key phrase when stowing. The Mirror stowage compartments can hold a lot when carefully packed. We found that 'family' size cans of soup, once opened, will sit on a Gaz stove for a hot and tasty snack ashore. Disposable soup pots, as it were.

Few dinghy sailors get experience of night sailing. With light or moderate winds and a safe forecast, sailing at night can be most enjoyable. As dusk gives way to darkness, the eyes become accustomed to the much lower light level. Provided you don't keep destroying your night vision by use of a torch, it is amazing how much can be seen and how position can be judged by the changing relative position of lights on shore. Distance is very difficult to judge at night, but as shore is approached, ears come to the aid of eyes, and the shore sounds, properly interpreted, can give much needed information. One thing I personally learned on this trip was that if another craft, near the limit of visibility, sails across the lights of a village or town on shore, instead of being silhouetted by the lights behind, it can vanish in the darkness. Perhaps looking continuously towards the lights partially destroyed my night vision on this occasion. Fortunately, when this happened, I knew well enough where Jock and Russell were going, so we joined forces again without too much searching.

Much thought should be given to choice of clothing. You won't have space to stow a lot of spare clobber, yet you'll want some kind of change unless you aim to beat Jock's record of 36 hours continuous wear of wet-suit and socks. He never felt cold, but when he reached home he felt quite 'unwanted' until he'd stripped and showered. Hardly the sweet smell of success after an epic voyage.



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# Expeditions

by Bob Fewtrell

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Non-racing Mirrormen may be interested in expeditions organised on the following lines.

If a fleet of Mirrors, preferably with a powered escort craft, wish to go off for the day to explore unknown waters, a leader boat should be appointed. She should have some distinguishing mark, such as a certain flag or hull colour, and have a fairly responsible person on the helm. A 'Tail-end Charlie' with a different identification is also needed. All crews should be instructed that, whilst under way, they are to keep astern and to leeward of the leader boat and ahead of 'Tail-end Charlie'. They also need to be able to heave to.

Once the fleet has set sail, the leader really becomes responsible for the whole fleet. Not only must he set a course well clear of all hazards, and keep a good eye open ahead, but he must also watch his flock; if they get too strung out he should heave to and wait while they close up. This means that, as each boat arrives on station it needs to heave to in turn. Once they are in a bunch again he may proceed.

This system has been found to work very well, even with a great variety of experience within the fleet. The National Sailing Centre uses it regularly in the Solent with various instructional groups from elementary standard upwards.

An additional safety feature is the carrying of flags by the escort craft with meanings understood by all members of the fleet. Those used by the N.S.C. are:—

N — Go Home

1st Substitute — Close me to communicate.

Answering Pendant — Reduce sail.

RY — Come and take a tow.

The escort craft is also useful for carrying picnic lunches, spare gear, etc., in addition to the usual equipment such as first aid kit, flares, blankets.

Why don't you organise an expedition some time, they're fun and they're safer than going alone.

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# Peter Barnes Hove to...

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Sailing at sea, particularly when it's blowing, tacking can become a slightly more difficult manoeuvre. Not having enough way or a combination of wind and waves, a situation arrives where the dinghy reaches head to wind and refuses to fall on the next tack. This, feeling the proverbial lemon, is where you become 'stuck in irons.' The exact meaning of this phrase I throw open as I just do not know, however, I hope I do know the cure...

At one time, I tried wagging furiously with the tiller to very little effect. This tended on the whole, to keep the dinghy head on, and not to pull it round. It was only later I realised, that within seconds of reaching head to wind, forward motion stops, and backward motion starts. Once I realised this, the method of freeing became apparent, insofar as the need to is steer backwards.

So remain on the windward side, free off the main and jib, and push the tiller away from you and hold it there, resisting the temptation to waggle, and the boat will then swing round to beam on. At this point the main and jib can be pulled in, allowing you to continue sailing.

Earlier I said that I did not know the original meaning of the expression 'in irons' — and there is another one about which I am completely in the dark. This is the term 'hove to'. Yet to 'heave to' is an extremely useful manoeuvre to master whether racing, pottering or fishing. With full sails set, you and your crew can lie back and relax, particularly during the pre-start frenzy with the majority of people belting back and forth in the start area. Moving forward on a tack with the jib cleated, you go slowly about and keep the jib cleated. This is now on the wrong side. The main is let completely free, and the tiller is pushed fully to leeward. The centre-board is left fully down to resist side movement. The effect of the wind is first to push the jib, which is backed and the bow swings round. The wind then affects the main which gives the dinghy a slight



forward motion. The rudder, being hard over, swings the bow round, bringing the jib into play, and the whole procedure starts again.

When I said you can lie back and relax, I meant it literally, with your foot against the tiller. It leaves you free to close your eyes, and enjoy the pleasant(?) motion – or even have a mackerel line over the side.

Now, that reminds me of something totally irrelevant – my first Mirror Dinghy, old 1981. Boat was originally built for fishing, and I remember taking it with me on holiday to Dartmouth to have its second dip in the water, almost eighteen months after building it. Sails were completely out as I still didn't know how to sail, and I'd taken an old 5 h.p. Clinton outboard with me so that we could do a bit of fishing. Came the launch during the week and the engine started, we motored out of the Dart into the sea. I found out the hard way the need for a dummy centreboard or something to fill that hole. Every wave we went over and slammed down, more water poured in – still, not to worry, a bucket kept it down to a safe level, and who cares with the sun, and water and the rods on board. About a quarter to half a mile off shore the rods were rigged up, and battle commenced. As luck would have it, it was no time at all before we were catching mackerel and pollock. Using light spinning tackle, these fish put up a marvellous fight. As soon as they were boated they were unhooked and dropped in the bottom. After some half dozen, Brands Hatch had nothing on this. I wasn't sure whether to wave a chequered flag or what – the fish were circuiting the centre-board case – I wonder why they went clock-wise?

Still, this is the fun with the Mirror. Ever tried sailing backwards? Try it when the winds are light as it can be a bit hairy if a gust hits you at the wrong moment, and the resultant strain on your rudder fittings can be quite heavy.

To get this rather odd way of sailing, tack as if you were going to 'heave to' and have the jib backed. At the same time, back the main and push the boom to windward. The roles of the sails are then reversed – the main becomes the jib, and the jib the main. It is a most peculiar sensation having a rudder at the front.

Another thing you can try is to sail the boat without the rudder. A combination of playing main and jib can give steerage so can heeling the boat to windward or leeward.

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## Cold

by John Stevens

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When you say 'I'm cold,' generally it is only partly true. If you really were cold you probably wouldn't be able to speak properly. Usually it would be more accurate to say 'I'm losing heat too rapidly,' but that does not have the same terse quality required when your teeth are chattering and the rescue boat hasn't noticed.

The most important effect of cold upon humans is the mental incapacity that can result from comparatively short periods of exposure to the cold. In an experiment with young naval volunteers, most of the men were mentally helpless after 20 minutes spent nude in the water at 5°C (41°F). Well, that's pretty drastic treatment but of course the effect is progressive and it is difficult to specify in advance the exact time span and conditions in which any one person could be in serious trouble. The solution is to make sure that you always leave yourself and your crew – especially a child – a really good safety margin.

$M \pm C \pm R = O$ . ( $\pm$ , plus or minus according to whether it is a gain or a loss). This is 'the comfort equation' and shorthand for your heat balance. It is basic to the mechanism which keeps your body temperatures at or near normal, 98.4°F or 37°C.

M stands for metabolism and this is the process which converts (burns) the food we eat to produce energy and heat – the dreaded calories of the slimmers.

C stands for convection by which we lose heat to the air.

R stands for radiation by which we lose or gain heat.

If they all add up to zero, then we are comfortable. If not we start to become warmer or colder, and then what? If you are too hot either stop working to reduce M, or take off some clothes to increase C, or sweat to add E = evaporation to the equation. This last is very efficient if the



atmosphere is not humid, but to the sailor, hill walker, and so on, can be a positive menace because whether your clothes are wet with sweat, or with rain or sea, a wind and a dry atmosphere can remove enormous quantities of heat from your body by evaporation. This is why windproof garments are so vital.

So if you are too cold conserve M (goose-pimples shut off the supply of warm blood to the skin), increase M (teeth chattering, running on the spot), decrease C by putting on clothes and stop E happening with oilskins. R you can vary also — a radiator is your own body, the sun or any other source of heat and any surface — your clothes, your skin, the ground — will absorb radiated heat.

Fortunately we don't generally have to think much about all this because whether we know the equations, the physics and chemistry or not, we don't have conscious control over goose-pimpling or sweating and we have consigned to the subconscious most decisions about being active or lazy or wearing clothes.

However, in the animal kingdom man's emergence and survival is marked by the special development of the brain, and the winners amongst men, in dinghies or anywhere else, are those who use their heads. The survivors of disasters are often those who used their heads. For instance:

The Sea Gem was an oil rig wrecked in the North Sea. A survivor was wearing every stitch he possessed because he had recently returned to this country from the Persian Gulf. His mates were lightly clad and, significantly, were too stupid with cold to react to his instructions.

The liner Lakonia foundered north of Madeira in December 1963 in water at about 17°C — like our west coast summer seas. 124 people died, many wearing efficient life-jackets. The available evidence suggests body heat loss was the main cause with progressive mental helplessness as an important factor.

Mr. Harry Eddom, skipper of the trawler Benella, had his trawl warp cut recently in the cod war. He made the headlines in 1968 also as sole survivor from three trawlers lost in winter off Iceland. That he got ashore on a life-raft was remarkable enough; once ashore he curled up small in his oilskins and

stayed out of the wind until he was discovered, alive. He did all the right things; he didn't produce more heat than necessary by being active and exhausting his reserves rapidly; he reduced his surface area to a minimum and the area he had to expose was covered by the fairly impermeable oilskins. Thus the minimum of heat leaked out and that little wasn't rapidly removed by wind.

If you are actually immersed in water the situation is not so clear, but clothing is a definite help provided you don't start thrashing about — then the clothing and water will hamper your movements and you will exhaust yourself more quickly. Clothing, especially oilskins and, of course, wet suits, will retain water your body has already warmed up but if you start to move actively you will tend to displace that warm water and allow cold to flow in.

But disaster is a very extreme word. Is a week-end dinghy sailor really at risk? Yes, I think so, to some extent, which depends upon himself. Indeed, if there wasn't some risk would it be half the fun it is?

A symposium in 1967 on 'The Effects of Abnormal Physical Conditions at Work'\* dealt particularly with cold exposure. Treatment, for a normal healthy person who has become too cold due to some recent accident, was considered there to be rapid warming as in a hot bath. Frostbite or long term coldness are quite different. Hypothermia in old people (and sometimes babies) in winter due to inadequate home care is not uncommon and requires medical attention.

*\*Report published by E. & S. Livingston Ltd., Edinburgh and London, 1967. Sea Gem & Lakonia referred to in it.*

**GENERAL REFERENCE:** 'Ergonomics' by K. F. H. Murrell, Chapman & Hall, London, 1965.

#### **USEFUL BOOKLETS:**

Walter, R.N. 7th reprint from R.Y.A. Magazine (Winter 1970).

'Mountain Hypothermia' pamphlet produced by British Mountaineering Council.

#### **CLUB EMERGENCY EQUIPMENT:**

Space Blanket; heat-reflecting sheet or bag to envelope patient. Cost from £1.50 to £5.00.

Space blankets and 'Mountain Hypothermia' available at Boy Scouts Association Shops. 'Cold can Kill' available from R.Y.A.



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# Capsize drill

by Roy Liddington

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Towards the end of the season I had the opportunity of practicing the capsize drill (based on the R.Y.A. Method) in a Bosun Dinghy in Portsmouth Harbour. Our racing or more nimble crews will no doubt have their own techniques and the R.Y.A. Method can be adapted to suit individual requirements. However, this places the emphasis on safety, and certainly should be used by novice capsizers, in very high winds, when a swell is running, or in tidal waters.

If a spinnaker is in use, it should be removed by the crew between either steps 2 & 3 or 5 & 6. In centre-mainsheeting dinghies, the crew's activities are carried out aft of the mainsheet.

Single-handed helmsmen will invariably need to board over the stern. A loop tied in the trailing mainsheet will assist in gaining a foothold. Light-weight helmsmen with heavyweight crews should change roles from step 3 on.

If the boat inverts completely a substantial pocket of air is available for anyone underneath. When helmsman and crew have got outside the boat on the same side, one should put his weight on the quarter, the other can then stand on the gunwale and pull the boat horizontal by pulling on the centreboard or far jibsheet. The boat can then be righted from the horizontal position.

A demonstration of this Capsize Drill from the fully inverted position was given at Lake Bala one September. Unfortunately, the squally conditions at the time resulted in most members missing this spectacular display. However, you will be pleased to hear that Mike has kindly volunteered to repeat the performance, at regular intervals.

From experience, I would recommend that the helmsman and crew slip into the water early (particularly from high sided built-in buoyancy dinghies), preferably before the mast hits the water, and so reduce the possibility of the boat inverting completely.

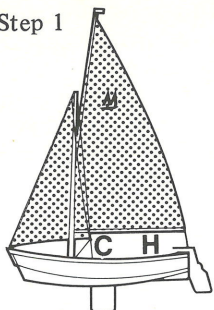
Swimming with a lifejacket on can be something of a revelation, especially one with high chest buoyancy (e.g. Crewsaver, Beaufort, Admiralty types, etc.) — back stroke is sometimes easier. Well displaced buoyancy aids make little difference, whichever way you swim (anyway, it's darned awkward!) Mirrors and other dinghies with built-in side tanks float very high (Step 5) and the helmsman may find that the centreboard is at arms length above him in the water. When he is getting into position to be scooped up into the boat (Step 7) the crew should avoid putting any weight on the boat, but should float (face down is probably best) holding on to something convenient such as toe straps or centreboard case.

In the final manoeuvre (Step 8) the helmsman can gain added advantage by floating on his back, bending his hips and knees and placing his feet high up on the hull, the jibsheet held tight and the knees and body straightened before walking up the boat.





Step 1



*View diagrams as from above*

1. Boat on its side. Helmsman and crew slip into water between hull and boom.

2. Helmsman works round to stern and exerts force on rudder to prevent boat inverting.

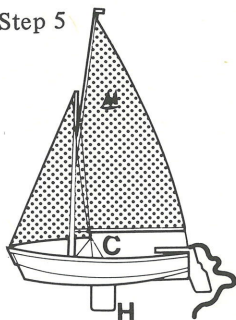
Step 3



3. Crew works along to stern, coils up length of free end of mainsheet and hands it to helmsman.

4. Helmsman, holding mainsheet as a life-line, swims round to centreboard, while crew exerts righting force on rudder.

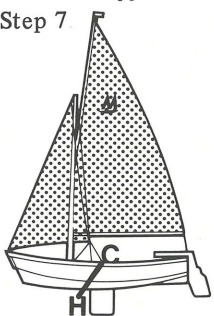
Step 5



5. Helmsman bears down on centreboard to prevent boat inverting, releases sheet. Crew works back to original position.

6. Helmsman moves to leading edge of centreboard, still bearing on it. Crew throws free end of upper jibsheet to helmsman who acknowledges he has caught it.

Step 7



7. Crew lies along the lower gunwale, partly in the boat and partly in the water. Crew tells helmsman when he is ready and in position.

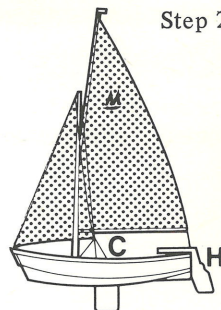
8. Helmsman, floating horizontally, puts feet on bottom of boat, and pulling on jibsheet, hauls himself out of the water walking up the hull. This exerts a strong righting force on the boat, which will suddenly right, scooping up the crew.

Crew frees sheets.

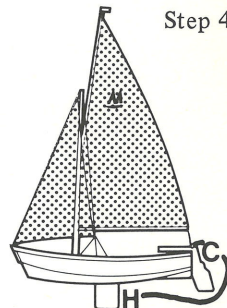
Helmsman presses on gunwale or transom, hoisting head and shoulders into boat with head well down. Crew grabs helmsman and hauls him into the bottom of the boat.



Step 2



Step 4



Step 6



Step 8





# Reefing

by John Harrison

Reef a Mirror? Certainly not for racing — but there are occasions when a lightweight crew might find it useful, and prudent, to be able to reduce sail. Also for anyone interested in passing the RYA National Dayboat proficiency tests in a Mirror — and why not? — one of the requirements of the Intermediate test is reefing afloat and under way. In a Mirror, if you try the standard method of lowering away on the main halyard, and rolling up the foot on the boom, the gaff falls away and inevitably you end up with a nasty crease from the throat and a most inefficient sail and, what happens to the kicker?

A few simple modifications make a tidy seamanlike reef possible. You have no need to touch the boat or alter your spars in any way — all you need is one old mainsail and there must be plenty of them around — cast offs from the 'new sails every season' brigade. You only want one sail to be modified for a Fleet and that sail can then be lent to any one in need.

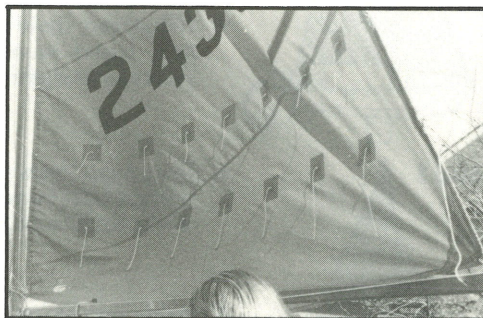
The change to the sail is the fitting of traditional reef points (what else on a loose footed main!) Put in as many rows as you like, but it saves work if you line them up with the luff lacing eyes, which can then be used as tack cringles when reefed. The reef points are simply dressmaking eyelets with a stiffening patch of sailcloth stuck on each side of the sail (Yes, stuck — glue — it's easier than stitching) and it is easiest to melt the hole through the three layers, rather than punch it out. It is surprising how tough you will find the sailcloth, even on an old blown out sail. A small bit soldering iron or heat gun makes a neat 'heatsealed' hole.

Some stitching is necessary to fit clew cringles to the leech at the end of each row of reef points. The easiest way is to fit cringles to a line at the correct spacing, and then stitch the lot on as a leech line from clew to the first batten pocket.

The only other 'extras' you need are a small block, a peak halyard and a short piece

of line to lash the block to the peak of your gaff where you normally secure the peak of your mainsail. Secure the new peak halyard to the peak of the sail, reeve it through the new block at the peak of the gaff and use as a peak halyard. Then rig as normal. If you are short of halyard cleats you may need to transfer the jib halyard to the shroud plates, and then use the jib halyard cleat for the peak halyard.

To reef, lower on the peak halyard (the gaff halyard is *not* touched, the gaff remains in the close up position), transfer tack downhaul to reef tack cringle and clew to reef cringle, adjust peak halyard, tie up reef points (reef knots of course) and that's it — with kicker, tack downhaul and clew outhaul still usable.



*Sail fully hoisted showing two rows of reef points.*



*Sail double reefed almost down to the first batten.*



# Single pleasures

by Vernon Milsom

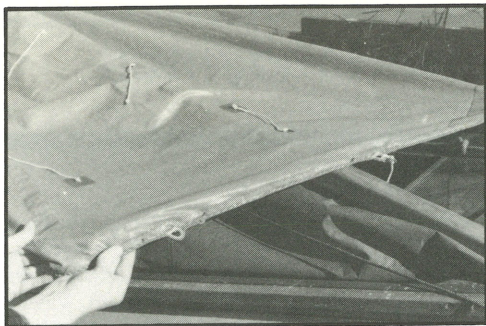
You want to go for a few days single handed sea cruising? Well now, being a novice, or just practising good seamanship, you have already read every library book you can get your hands on and you know how to build, repair and sail your Dinghy. You can take bearings, read a compass, maps and charts, you know which way a west wind blows, an easterly current goes, the difference between springs and neaps. You have practised tacking, reaching, gybing, sailing without a rudder, rowing and especially capsizing and safe recovery.

Your chief requirement is a well found boat. And that means as near perfect as possible. No half wetted glass tape, bare patches, leaks in buoyancy tanks, worn out rigging, tight blocks, tatty sails, etc., for you. Everything should be in sound working order, rowlocks and oars to hand, anchor tied to boat and ready for use, a spare line. Have you checked your rudder fixings lately?

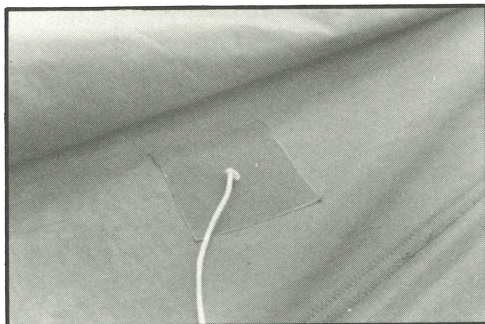
A reliable companion with a boat is an asset. It is safe to go it alone but it takes experience, planning and care. Together you sit down and study the tidal and current information, charts and O.S. maps of the area you intend to cruise, until looking at a chart is as familiar as looking at the 'box.' About a third of your enjoyment comes from this, make the most of it! Then comes the planning of 'things to take.' List these, starting with the boat and trailer, personal buoyancy, right down to small change for phone calls. If you don't list it you may leave it behind! I list some 84 items for a five day cruise.

When at sea, it is wise to give way to everything except dinghies and small power boats. With these types stick strictly to the rules. Make your intentions clear and in good time. Look for those ferries and other ships a mile or two away. They are closer than you think! Always cross a fairway or main harbour entrance as near 90 deg. as possible. Look under your lee, continually!

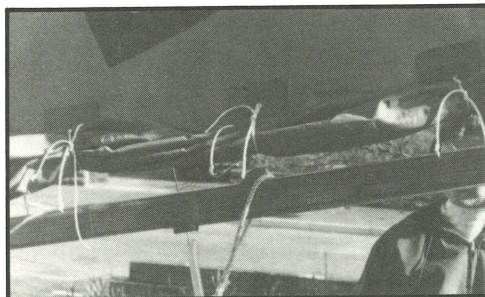
If you get becalmed and have to row,



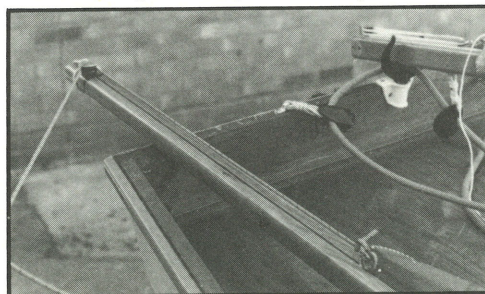
*Detail of reef cringles and leech line.*



*Details of reef point and strengthening patch.*



*Reefs leave boom clear with kicker and out-haul working normally.*



*Peak end of gaff showing peak halyard and temporary block.*



check your mainsheet figure of 8 knot is there, douse the mainsail, move kicking strap along to gooseneck, place gaff and boom together, tuck in mainsail tidily, hitch the end of mainsheet around gaff and boom at the gaff band tying them together, haul the main halyard in tight and your gaff, boom and mainsail will be hoist above your head at about 45 deg. You can now row and see clearly. If the transits astern are kept in the mainsheet triangle so formed, you will row a straight course, rudder comes up, jib left flying so that you can be seen more easily.

If you are offered a tow, rig the gaff, boom and mainsail as recommended but also douse the jib, leave rudder down, place your centreboard only 10% down, secure the towline with a clove and slippery hitch to the bottom of the mast (deck level). YES — it will take it. You must be able to let go immediately if necessary, and being a well found boat—! Keep your weight aft, low in the boat, and the slippery hitch to hand. Give the go-ahead slowly signal and steer just clear of towing boat's wake. Your companion can be towed from your thwart or on a separate tow. And while I think of it — thank you, sailing yacht 'Solent Arcturus' for that beautiful 2½ mile tow from North Ryde Middle Buoy to Stokes Bay on Tuesday 12th June 1975 dead calm 86 deg. F. It was very much appreciated!

### *Tailpiece Tips*

1. With a white hull touch in scratches with 'Snowpake'. Three coats in two minutes.
2. When at sea check transits. You are travelling over the ground in the same direction as the background appears to travel.
3. To test your tanks on a warm day, take out plug carefully, if you don't hear a rush of air — it leaks!
4. In heavy weather — keeping your boat moving, even in the wrong direction, minimises the risk of a capsized. Good sailing.

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# The Handyman

by Ian Wilkinson

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## A Light Trolley

An idea arose out of a desire to have a very *light* and simple launching trolley, without the complication of having to fold or dismantle it. The main problem was to locate the trolley on the boat, and the final solution rather resembles a centreboard with wheels on the bottom, but which enters the plate case from the *bottom*. There is no handle, the boat is simply pulled along by the stem. This device is intended for use when the boat is normally carried on a car roof, and travels inserted in the plate case.

A piece of half inch (13mm) marine ply, the width of a centreboard, and 6 inches (153mm) high, is sandwiched between two pieces of 1 1/2in. x 1 1/2in. x 1/8in. (38mm x 38mm x 3mm) M.S. angle. Each piece has a 15in. (381mm) length of square section 1in. x 1in. (26mm x 26mm) M.S. tube welded to it. Short pieces of 3/8in. (9mm) diameter mild steel rod are welded to the end of each square section tube. These form the axles for 7in. diameter wheels made of plastic with rubber tyres, available from Halfords at 88p per pair (at time of writing!)

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## Roof Storage

My garage space has to be shared on some occasions by my car or (I'm afraid to admit other loyalties) my Enterprise. The simplest solution is to hoist the Mirror into the roof.

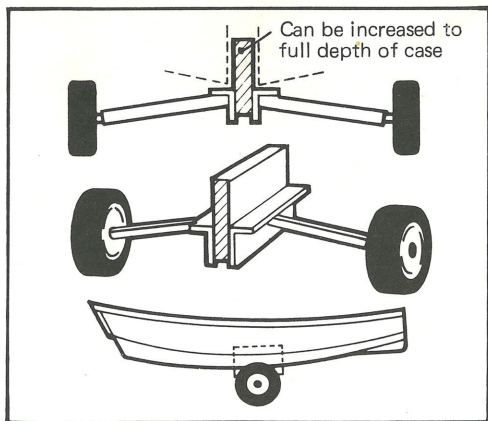
To get the required leverage, it is necessary to employ a mechanical advantage of 4 (2 at each end). The anchorage on the boat is the forestay plate at the bow and a similar plate screwed inside the transom. The accompanying sketch shows the details, (not to scale).

After hauling up against the roof a strap is passed down around the boat amidships, and up back to a convenient rafter, the fore and aft tackles are eased to spread the supported load.

The effort needed is within the scope of an average adult (I weigh 14 stone (196 lbs))



The following diagrams illustrate the device.

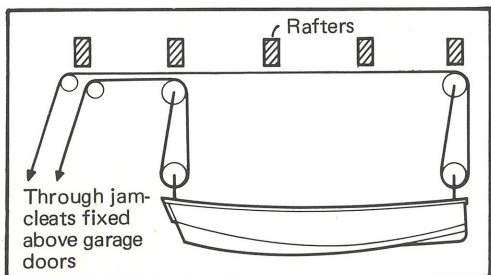


The boat moves easily on a hard surface, and fairly easily on hard sand; on soft sand, however, it does a good imitation of a plough!

The trolley is easily removed by tipping the boat by the bows until it drops out. Replacement is rather more difficult as it requires three hands, seven feet apart, or a crew who is prepared to grovel on his knees in the water while the boat is lifted by the bows. In practice it is not as bad as that — as I usually pull the boat almost clear of the water before putting the trolley in place. I'm not suggesting that it is a very practical proposition for launching over 100 yards of beach, but it works very well off a slipway.

which explains the need for an Enterprise, and why I only do well in my Mirror in races above force 5). But a child would have difficulty.

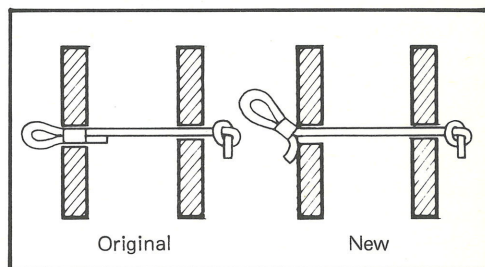
A word of warning! Make sure that you can trust those jam cleats until the boat is finally secured or you will be in Newton Crum's bad books!



## Gaff Jaws

After losing the umpteenth wooden peg retaining the gaff jaw elastic, I simply pulled the loop in the elastic a little further through the hole in the jaw, and hey presto! the elastic is secure and has NEVER come loose while sailing.

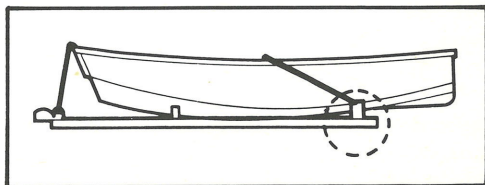
The elastic is easily released by stretching it a little further, holding the loose end in, and letting it return through the hole in the gaff jaws.



## Boat Straps

Terylene straps to secure a Mirror to its trailer are not cheap, and an alternative makes use of the original cheap cotton sheets supplied with the boat.

If, like me, you used fairleads for the mainsheet before realising that blocks are essential, you now have a very tatty mainsheet in your junk box, having replaced it on the boat with the proper Terylene stuff. Waste not, want not! usually it is possible to cut two unfrayed lengths from it (or an old jib sheet) which can be used in place of boat straps. Tie one end of each length to the metal securing loop near the mudguards on your trailer. Pass the other end through the appropriate jib fairleads and jam them hard. The ends inside the boat can now be wrapped around the mast, boom, gaff bundle and hold these together securely in the middle of the boat. If the stem is lashed down in the normal position there is a fore and aft tension on the boat which locates it longitudinally.





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# Collision course

by Michael Pocock

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Have you ever noticed that the typical motorists' slanging match is much more common in provincial traffic than in the more sophisticated cut and thrust of Central London? If so, have you ever stopped to wonder why? My own answer is that there is in London a much higher standard of competence and a strict jungle law that, although it is mostly unwritten, is instinctively obeyed by the regulars. In the provinces there is far less common code between the drivers and so the temptation to claim innocence in the face of the other fellow's ignorance is much more usual.

Why, you may ask, is this fellow rambling on about driving motor cars when 'Mirror-mania' is surely all about sailing Mirrors? Well, regrettably, there is the same tendency on the water for the helmsmen to try and hide their ignorance by voluble haranguing of others. It is a shame when this happens. Sailing is for fun and must not be spoiled by unnecessary ill feeling.

When this does occur it is invariably due to an ignorance of the proper rules and customs of the water. Some of these are laws, the official International Regulations for Preventing Collisions at Sea to give them their proper title. The others are courtesies generally involving the waiving of his rights by one skipper so as not to make the other fellow's problems greater than they already are.

I am here only concerned with the cruising sailor, the racing man has far more complicated legislation to learn.

Despite what you may have read in your Mirror sailing instructions, the present regulations became law in September 1965 and the reference to sailing boats is as follows.

## RULE 17

### Two Sailing Vessels meeting.

(a) When two sailing vessels are approaching one another, so as to involve risk of collision, one of them shall keep out of the way of the other as follows:

(i) When each has the wind on a different side, the vessel which has the wind on the port side shall keep out of the way of the other.

(ii) When both have the wind on the same side, the vessel which is to windward shall keep out of the way of the vessel which is to leeward.

(b) For the purpose of this Rule the windward side shall be deemed to be the side opposite to that on which the mainsail is carried or, in the case of a square rigged vessel the side opposite to that on which the largest fore and aft sail is carried.

I have quoted the entire Rule 17 because in my opinion it is a masterpiece of simplicity. Two simple rules and one definition cover all known eventualities that can involve two sailing vessels irrespective of size or shape. There is a minimum of legal conundrums and unless you happen to own a square rigged Mirror dinghy, which I suppose is perfectly possible, then (a) (i) and (ii) are all you need to know. In a nutshell, Port tack gives way to Starboard and the windward boat gives way to the one to leeward. Think for a moment, however, about the opening wording. It is not as stupid as it sounds to say that one shall keep out of the way of the other. What is meant is that only one boat should alter course and should be able to rely on the right of way boat continuing without altering, until they are well passed each other. There can be some most disastrous collisions if in an excess of gentlemanly zeal both boats give way at once.

There are two other rules that are worthy of note. Rule 20 states that a power driven vessel must give way to a sailing vessel. It goes on, however, to say that the sailing vessel cannot expect this benefit if the power vessel is in a narrow channel and cannot alter course safely. This is where the rules and courtesies begin to get merged and common-sense must prevail. It applies just as much to the QE2 entering Southampton Water as quite a modest motor cruiser in a crowded anchorage on a busy evening. The most seamanlike sailor will avoid the situation well in advance by an extra tack close to the shore or by merely planning his course so as to use shallow water that the larger vessel cannot use anyway. Nearly every type of vessel, large or small, relies on forward



movement to maintain control and if the QE 2 had to stop off Cowes to avoid a Mirror dinghy it is very doubtful whether the pilot could regain control without the aid of tugs. In just the same way the motor cruiser who is forced to go full astern to avoid a collision will quite likely end up across the channel before he can regain control. If there are seven more yachts behind him, the resulting chaos can be quite serious. Rule 24 says that whatever the situation the overtaking vessel must keep out of the way of the overtaken vessel.

To dwell for a moment on the unwritten courtesies, these have come about to avoid a right of way boat causing a lot of trouble to the other, when to turn away in good time, would be much less trouble. To take an extreme case, it takes two people perhaps 20 seconds to tack in a Mirror dinghy and twenty or thirty seamen 20 minutes in a big sail training ship like the *Amerigo Vespucci*. It would therefore seem a trifle selfish of a starboard tack Mirror to hail a big square rigger about! It could happen, but I hope not. This is of course in complete contradiction to my comments about the right of way boat holding her course. The proper answer is that if you are going to waive your rights, make a very obvious alteration of course well in advance so that the other chap is in no doubt of your intentions.

My last offering on the subject of courtesies is the custom of cruising boats giving way to racing boats. Nothing is more frustrating to the racing helmsman than to see his opponents escape ahead while he is forced to alter course for a cruising boat that has a right of way through the fleet. Unfortunately, too many racing sailors regard it as a right that they should take precedence over a boat that is 'only' cruising. This is a boorish and stupid attitude that only leads to ill-feeling and a widening gap between both sides. It is sad when this happens as the sea is there for all of us. It is worth suggesting, however, to the cruising sailor that the boats that race are frequently very beautiful and spectacular and can be thought of as a great delight to watch. If this aspect is appreciated then to give up one's right of way occasionally is a favour in return.

A yacht or dinghy always carries a square

flag at the masthead when racing. Conversely when cruising, a triangular burgee or wind-sock should be carried. Regrettably there are many owners who either do not know or care about this distinction who carry a square flag regardless of whether they are racing or not. This is a pity because it sours the attitude of the owner who has given way to them unnecessarily. In larger yachts the ensign is always taken down to race so that if it is flying it is an indication that the yacht is not racing.

Finally a word of warning, in crowded waters you must keep a sharp look out under your jib. Don't, however, assume that the other fellow is any better than you are. The cuts of many mainsails cause what can only be described as blind boats and many crews keep very poor lookouts.

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## Heavy weight required

by Peter Maltby

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I happened to look over the shoulder of a racing friend of mine as he unloaded his boat at the end of a trip. "What's that thing?" I asked him, pointing at a gadget just a bit bigger than a domestic tin opener. "My anchor, of course, haven't you ever seen one of these before?" said my friend opening up a small grapple, "It's in my insurance policy, you know — anchor and warp to be carried and all that — and in the racing rules, too, of course — bit of a nuisance though — extra weight you see. I s'pose it makes sense though — could be dangerous without it — at least the rope's nice and light."

I didn't like to hurt his feelings by observing that his anchor warp was probably buoyant enough to support the anchor clear of the bottom on its own, and that was probably just as well because the in-board end wasn't tied off to anything anyway. Actually I had an anchor of my own, just like my friend's but about five times the size. The difference between us was that I had at least attempted to use mine.

My kids are rather keen on fishing (they've got all the gear anyway — and mostly bought out of their own pocket money, too) and in



a weak moment I said "Yes", they could fish off shore from the Mirror but I would come along too, and away we went.

I didn't want the main and jib snagged by badly aimed fish hooks so we left them behind and rowed out into the bay under bare poles. The tide was ebbing at about a couple of knots, with a light breeze blowing with the tide, so things were fairly comfortable. We deliberately steered upwind, and about two hundred yards off shore I called to the fo'c'sl party to let go. "Anchor up and down" was reported with about 20 feet of polyprop warp over the bow and we drifted down wind veering cable as we went until there was a slight jolt to mark the fact that the whole 80 feet was out. By the time I had stowed the oars out of harm's way in the bottom of the boat, the kids had already got most of their gear over the side and I cleared a way up on to the foredeck, noted the anchor warp was nice and taut, and settled down for a lazy couple of hours in the sunshine.

It couldn't have been more than a couple of minutes later (because even my youngest hadn't yet reeled in his line to see what he had caught) that I sat up with a jolt — something was wrong — suddenly I realised that the bow wave, which should have formed itself around the cable, was little more than a ripple, and that the landmarks inland were passing the ones near the beach. We were still moving — and at an alarming rate!

By the time I had got myself abaft the mast, and disentangled the oars from the tangle of fishing line, the picturesque stack rocks, observed from our camp on the cliff top, were looking less picturesque than menacing!

Fortunately we all had no more than a good fright, although it was hard work getting back to the beach against the wind and tide.

As soon as I could, I exchanged the polypropylene for a coil of manila (nylon is better) which sinks like a stone, and, just to make sure, added a fathom of chain between the anchor shackle and the rope. I suppose I might just have been unlucky that day, but I have not had trouble with dragging anchors since.

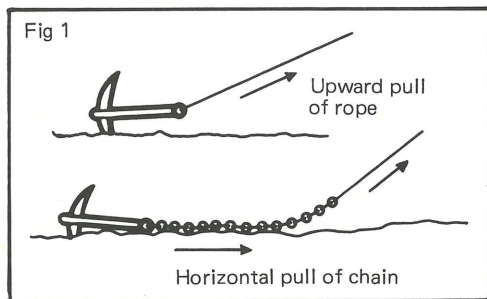
How well does YOUR anchor perform?

## Anchors aweigh

by Bentley Moss

My aim in writing this article is to pass on some hard-learned experiences of working anchors in small craft on tidal waters.

Firstly let us take a look at the equipment. A short length of chain should be shackled between the anchor and the warp. This changes the direction of drag on the anchor from an upward to a horizontal force (fig. 1.)



The holding power of the anchor depends on its type and weight, the length and weight of the chain, and the length of the warp. The final decision will be determined by the circumstances in which it is to be used. My own equipment consists of a five pound folding grapnel type anchor, three feet of quarter inch close link chain, and twenty fathoms of one inch circumference 'hairy' polypropylene rope, chosen for its superior knot-holding qualities. This rig has behaved adequately, with the anchor holding well, yet dragging along the bottom when required. The painter should be about eleven feet long, any more and it may foul the outboard propeller if accidentally left upside. It should be secured permanently inside the boat close to the forestay eye plate. A useful piece of equipment is a large 'corkscrew' such as used to be sold for tethering dogs. Mine consists of nine by two inch spiral of quarter inch steel with a hand grip at the top. This is kept with the anchor in one of the forward stowage lockers.

The three principal uses for the anchor are:— emergencies afloat, holding the boat while fishing, and temporary mooring off a beach.



For general use the inboard end of the warp should be secured to a lacing eye between the locker openings on the forward bulkhead. The warp is then coiled inside the locker with the anchor and chain nested on top ready for immediate use.

When fishing from the boat at sea it will ride the waves more easily if the warp is secured well forward, preferably to an eye low down on the pram bow. Since the Mirror Dinghy tends to become unstable when down by the head, the warp should

be paid out over the side and made fast to the painter at a point not less than fifteen feet from the inboard end. Further paying out on the warp transfers the strain onto the painter which should preferably have been passed through the pram bow eye *before leaving the beach* (fig. 2). Do not attempt this at sea, let the boat ride to the painter's permanent securing eye. By using this rig there is no need for crew to be too far forward in the boat and the anchor is safely worked from amidships.

Fig 2

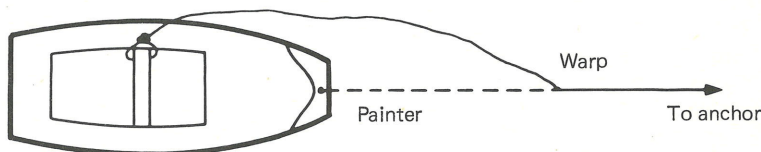


Fig 3

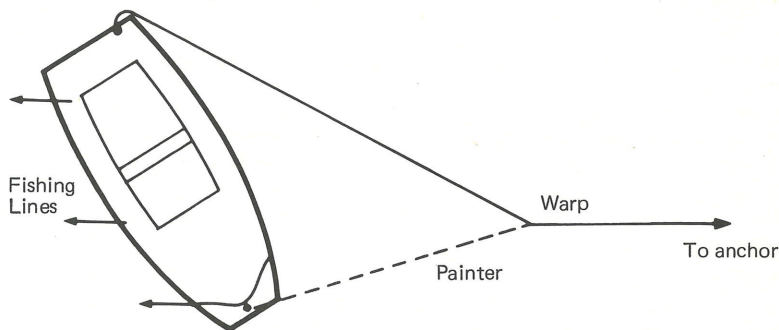


Fig 4

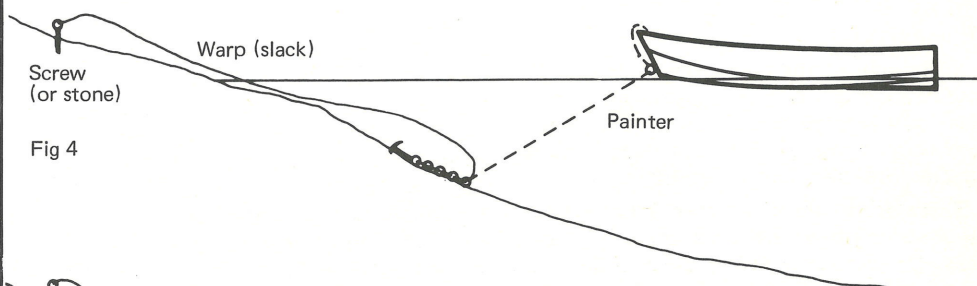
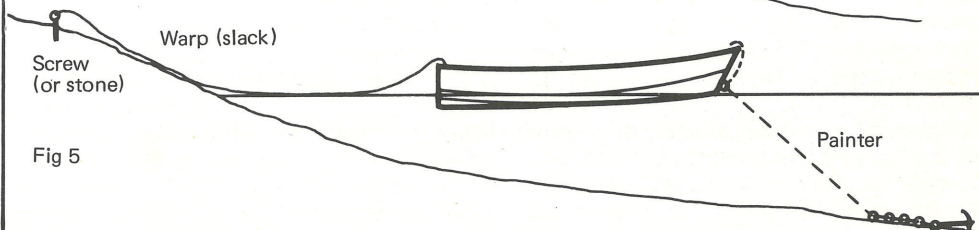


Fig 5





When fishing with several lines there is a tendency for them to foul each other. Provided the sea is calm the boat can be angled safely across a small current by taking the end of the warp to the stern, leading it inboard through the drain hole, heaving in until the boat rides to the bridle and making it fast (fig. 3). The lines may now be spaced out over the length of the boat giving them a greater separation.

Mooring a boat temporarily off a beach is a convenient method of avoiding the need to move it up before a rising tide, or down the beach after high water, wasting effort and risking bottom damage. On busy beaches the anchor should be laid in fairly deep water beyond the paddling range of small children where it can do no harm.

With an offshore wind the painter is made fast to the inboard end of the anchor chain, the warp removed from the boat, which is pushed offshore and, keeping hold of the end of the warp, the anchor is laid by throwing it into deep water. The warp can then be laid up the beach and the end secured with the mooring screw or stone (fig.4). As the tide rises the warp is drawn further up the beach, dragging the anchor and boat into shallower water. On a falling tide the anchor is re-laid when necessary.

If the wind is onshore then the painter is again used for mooring but the warp may be removed from the chain, secured to the stern of the boat and worked as with an offshore wind (fig.5).

Variations of the above methods may be used for mooring in inland waters and, where there may be a reduced need for an anchor from safety considerations, the lighter mooring screw will be a useful alternative.

There are various rules for the minimum length of warp to be used, such as three times the depth of water with something extra for a strong wind. In practice a longer length of chain is worth at least three times the same length of warp. If you want the anchor to hold then pay out all you've got. This provides the best chance of a good hold and keeps the boat clear of loose rope. It is worth remembering in an emergency that the sheets, halyards, and painter will probably provide an extra ten fathoms of anchor rope.

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## Chutes, anchors and fish

by Russell Gordon

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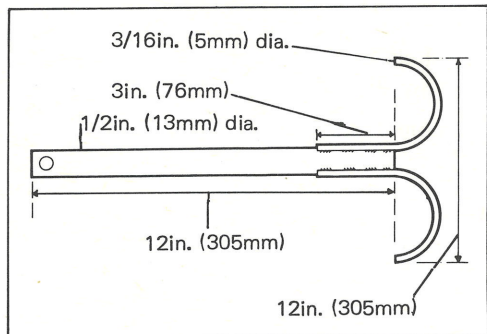
In my article *Cruise Around Fife*, I mentioned that 'Katy', M12746, was heavy with several coats of paint and badly needed stripping to the bone, and repainting. With the Scottish Area Championships in mind, I sent away for a spinnaker chute and sail patch, meaning to have 'Katy' in top condition for the weekend. This was not to be, however, the Atlantic is an angry mistress in winter, and I found myself patching and overhauling her ravages onboard a somewhat larger vessel on the other side of the Atlantic. By the time I got home, winter had slipped away and summer had arrived, sailing weather is not working weather. The chute had arrived and with it a note to say that the suppliers did not sell patches, and I found that none are available locally. In fact, I still have not managed to get one, my time at home being limited. Could I therefore appeal to those who advertise chutes to state whether they supply the gear to go with them, to enable people to get the spinnakers into the chutes, or if they are just supplying them as status symbols to be screwed to the deck of the Mirror?

With racing out of the window for a season, sailing tended to give way more than usual to fishing. In three weeks 'Katy' was out nine times working for the table. A couple of times over good 'ground' where normal anchoring and kedging was carried out, so ably described by Bentley Moss in his article, but the rest of the time was spent over very foul ground indeed, and perhaps I can give you a couple of tips on keeping marks on this type of ground, all ridges and crevices which can take hold of an ordinary anchor with a vicelike grip that results in the warp having to be cut. On this type of ground I have for years favoured the humble builder's brick, the type with the holes in it, and always carry one for changing with conventional anchor when fishing over changeable ground. If one can get an old brick off a beach where the holes are smooth at the



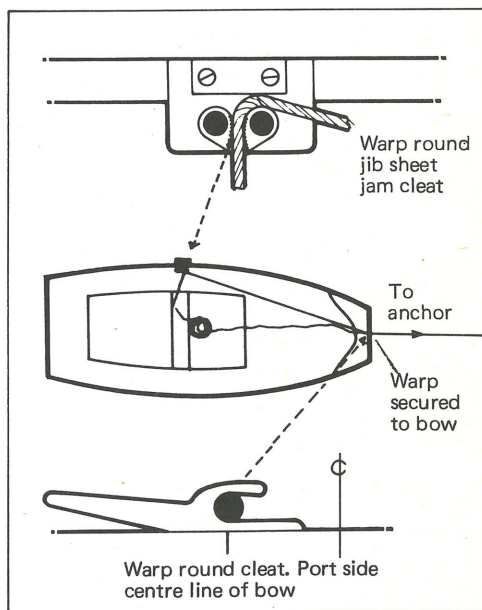
edges so much the better, as new bricks soon cut through polyprop ropes.

I have never had a brick jam yet, on bad ground and have held my 19ft. boat on same ground with it. (You need plenty of warp out.) Another means is to make a light grapple type anchor as sketched out of 1/2in. (13mm) bar and 3/16in. (5mm) 1/4in. (6mm) round steel, for prongs. These, when caught on a crevice, will straighten out under pressure and come free, being easily returned to shape by hand. Both these types of devices have kept me on marks with sea, tide and wind in one direction, with Katy's bow into the elements. Here however, I would stress that the appliances described should in no way be used on any ground as a permanent anchor, or be carried in the boat in place of a proper anchor. A proper anchor should be carried in the boat as well.



When anchoring in the deep waters of Loch Long I found that a lot of fishing time was being lost by the forward fisherwomen tying and untying the anchor warp. I therefore fitted a cleat forward and this cut adjusting time to a few seconds. Two days after fitting it, when fishing solo, in a force 4 with a fair sea running, I was adjusting the warp to give me a slow drift over a mark, bow to wind and sea, when a fish jerked the rod I was holding between my knees, almost over the side before I grabbed it. Now what to do? A bucking, jerking rod in one hand and an anchor warp in the other, and a fair sea running! Suddenly the answer was staring me in the face, the port jib sheet jam cleat, a flick of the thumb and the warp was secure, and I had both hands free to pull in the next day's lunch. So by accident I found a very handy, or lazy man's way of anchoring. One

never has to move from the thwart, just put a knot in the anchor warp 3in. (76mm) from the anchor chain, then chuck it over the side. When you bring her up to the anchor, let the warp slide into the cleat forward and then slip the warp into the jib jamcleats as sketched. Adjustments like shortening the warp can be made with one hand, you just pull down on the rope as it comes through the cleats and the cleats hold it while you change your grip. Pulling the anchor in one just pulls in from the thwart, the knot striking the cleat warns you the anchor is just below the boat, so you flick the warp over the starboard bow and the warp runs down the starboard side to your hand. The anchor can then be lifted gently inboard, with no damage to paintwork.

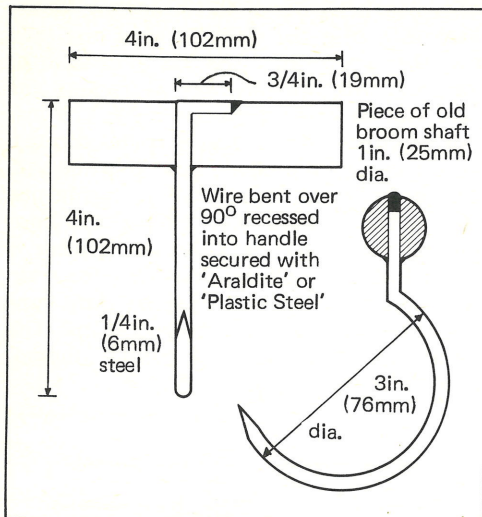


Getting a large fish into a low freeboard boat can be tricky, the ordinary gaff in a small dinghy is likely to poke out somebody's eye, and the vicious hook is a menace to stow. A solution was found by a friend, who was a school teacher in a tough area. He confiscated a docker's hook from a budding Al Capone, who was running an intimidation racket with it. It struck him that this thing, which literally becomes an extension of your hand, might be the answer. It was, and now most of the group



have made them.

I have given a sketch of mine which sits snugly between reels in my tackle box.



In nine trips Katy brought ashore 247½lbs. cod, 5lbs. haddock, 10lbs. whiting, 15lbs. flounder, convinced two people that the Mirror is the boat that will give them true independence, as no assistance is required in handling, and she proved to them that towing, launching, sailing and retrieving can be done by one person.

Finally, if anyone is thinking about taking up fishing, can I give you a few golden rules?

1. Never, never, never go out not wearing a life jacket.

2. Always remember warm clothing, even in summer it can get very cold on the water. Remember you are sitting still for long periods.

3. Have good waterproof clothing with you, there is nothing worse than having to leave a mark with fish on the feed, because it's raining, and you are getting wet. Remember some of these sailing suits though pricy, when it comes to heavy rain, are about as much use as a hip pocket in a singlet.

4. Make sure all essential gear is tied to the boat, oars, engine, etc.

5. Make sure you have a reliable engine. I have seen many different makes tried, but all-weather fishermen usually end up with the same make, the Seagull, and the 40 plus is ideal for the Mirror.

6. Keep your feet warm and dry.

## The very young...

by Sally Karlake

The arrival of junior needn't mean too long away from the water – and from the boats. Paul was about 19 months old when he first started sailing regularly, and from personal experience and other parents I have prepared a few notes.

The first problem is getting the embryo crew to feel safe and happy in his buoyancy aid. He needs to know that it will support him, and a great game is for everyone to put on buoyancy aids, and fool about in the boat in a few feet of water – inevitably someone falls out . . . but he floats! Super! And can very soon be retrieved.

The balance necessary here is one between safety and confidence, and making immersion fun. Junior doesn't want to be encouraged to jump out of the boat each time he is feeling bored. At a certain Championship some years ago, the Water Board insisted on ALL children under 14 years of age wearing buoyancy aids ashore . . . Paul wore his, and nothing else, and found 'falling in' very enjoyable . . . we had to 'rescue him' about five times until his buoyancy aid was taken from him, then, with no feeling of security in the water, he stopped throwing himself in! Try the first experiments with sufficient clothes that junior feels safe, but damp, and enough discomfort to discourage repeated submersion for the joy of it! Once you are ALL confident of the buoyancy aids, sailing in earnest can begin.

Junior is likely to be placed forward of the helmsman, and in a Mirror this can be damp! Getting the worst of the weather, he needs really good waterproof clothing – splashes on the face are fun, but once the water starts to get inside, you may have to turn back and run for home.

There are two schools of thought on footwear and keeping feet dry – Paul likes a certain amount of water in the bottom of the boat, with a large sponge, a small bucket, and a plastic spade. The spade is for paddling, and the other items are for cleaning house, bailing and getting some more water from the sea to put into the



boat. . . Other children are happier if you put them aboard dry-shod, and endeavour to keep things that way. One thing, on the subject of toys – your seamanship improves no end, as you constantly return to pick things up!

Stores . . . quite indispensable! Could be a packet of biscuits, or fruit, lumps of cheese. Paul likes a choice and several small items, and we must never forget the Polos! These are ideal for rolling along the foredeck at the moment of going about. The effort of retrieving takes small minds away from the kicking strap, the noise of the flapping sails, and the weight, conveniently pushed forward, helps the manoeuvre!

Children like something to look at – dabchicks along the banks, the odd crane, or building yard, anything which distracts their attention and keeps them amused – long sea-going voyages should be kept for a couple of years. Docks are wonderful! Paul's most successful races (and this includes picking up dropped toys!) were in Dun Laoghaire Harbour, there was SO much to watch!

When either sailing or outboarding, take some extra toys along and follow the same routes . . . children are very conservative, and like the familiar surroundings of favourite voyages. They can make friends with other children during shore-going excursions, and organise themselves into all sorts of sea-going adventures (on land!)

The Mirror, whenever possible, should be used to its fullest extent – sailing, rowing, motoring and a picnic afloat, from the 'Stores', is very enjoyable.

Few families have a buoyancy aid unless they have a boat to go with it, so it is very useful to be able to provide that extra aid for the small friend you take along, but beware of showing-off! Your ancient 3 year old Mariner becomes a positive danger to shipping whilst he conveys his familiarity with a life on the ocean wave. Sit on him, firmly. The other child may not be prepared to accept the discipline necessary in a boat, and the combination can be lethal. But time spent putting over the dangers, and the need for instant obedience, sitting quietly, etc. before going afloat, pays dividends.

Children love to become involved. Give them some responsibility within their capabilities – you'd be surprised how young

they first get the 'feel' of the wind, and start playing the jib-sheet. Never allow jamb cleats for children, though – this tends to make them lazy, and you'll breed a crew with no feel for sailing. Also those small hands on the sheets in light winds feel part of the boat, and their interest is maintained.

When at sea, put out fishing lines, and let small hands look after them.

Motoring on calm waters gives an opportunity for the small crew to take the helm – and in very light winds they can even get the feel of the rudder when sailing. They can be encouraged to keep things tidy, make sure each piece of line is free, and easy to grasp where and when it is next required, no sitting on the sheets!

The most important thing to keep in mind is that you want the child to sail with you again . . . thus the length of voyage must depend on him. When he is cold, frightened, or just plain bored, put back and you can count on him coming out again. You can often put into the bank, whether outboarding or sailing, to take on fresh stores, and an ice-cream.

Children like to think there is a purpose in it all – a blackberrying trip up the river, or a voyage to a desert island (that beach just around the corner), or a raid on an Indian Village for essential supplies (that general stores at the other side of the lake!)

When under power in calm water, children seem to like to lie on the foredeck, chins on top of the bow, watching the water . . . the helmsman should watch out for other boats and especially the wash of large craft!

However badly you sing in the bath, children love to make noise (and this can be converted into music as they get older) – learn all the sea-shanties you can. Try to catch (and hold) the child's imagination . . . Paul enacts tremendous adventures, and on later voyages these can be re-told.

The most effective way to teach junior to row is to put him in the boat, with oars, and tell him tea will be served as soon as he is in . . . this was the way a favourite Great-Uncle treated the Class Secretary many years ago – coming down Chichester Harbour behind the Sloop her father sailed, the dinghy was let loose – took a long time, but hunger was an excellent teacher. I don't



say this is the best method, but it works! The Mirror is not fitted for such activities, but children should also be taught that to lose one oar is not a disaster, sculling over the stern can propel you through the water too.

As the children grow-up there is one great danger . . . they will take the boat over entirely. But isn't this just what you were training them for? Be thankful for their continued interest in sailing, and buy them their own boat!

## ...and the young

by Bentley Moss

There comes a time in most Mirror families when junior wants to sail on his own. In our case this occurred sooner than I expected, probably due to his early experience which had given him a 'feel' for the boat. The many problems are obvious and these few paragraphs are intended to cover some of them.

The Mirror is an ideal craft for learners, it is reasonably stable, responsive to the helm, easy for the smaller sized person to handle, and sails well under a variety of rigs. It is also an excellent boat under oars, requiring very little effort to achieve good headway. It is here where we started.

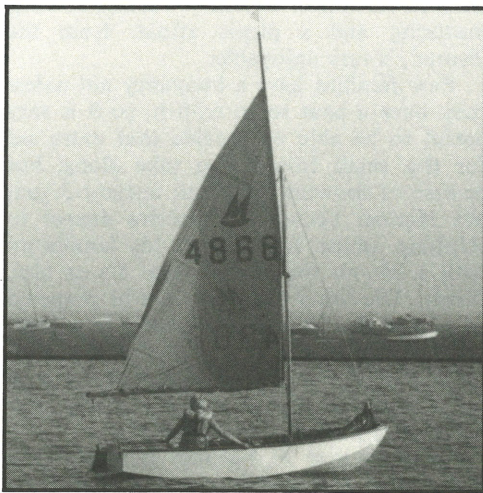
As a five year old, Adrian was very conscious of the large curved blades of the Mirror oars, which are fine in the hands of an expert but with a child rowing it is very wet work indeed and as I was getting most of the water something else was needed. Fortunately I had, from a previous boat, a pair of straight narrow bladed sea oars fitted with flanged plastic sleeves to retain them in the rowlocks. These proved an instant success and by the time he was six he was a competent oarsman. The need for keeping a lookout, bringing the oars inside the boat when not in use, manoeuvring alongside and keeping within the bounds of his limited energy are all part of good seamanship. The ability to take command and responsibility for the boat on his own proved a sound platform on which to start thinking about sail.

By this time he was an experienced jib-

sheet hand and could helm the boat after a fashion. The Ladybird book 'Sailing and Boating' provided useful reading on techniques with the added interest of several Mirror illustrations, unfortunately it does not cover the collision rules. The difficulty at this stage proved to be an inability to concentrate on the job for more than a few minutes. Time seemed to be the chief cure but whenever possible he was told that he was in command and could ask for advice when he needed it. This problem was the trickiest in the whole exercise and required a very delicate approach. Parents should seek their own solution, being best qualified to understand their offspring's temperament.

I now had a seven year old, who was a fairly competent helmsman, and no sure way of knowing how the boat would behave without my weight. As M4868 was still under the original Jeckell's rig, a new set of Rockall's was purchased and the old main taken to Perry's who put in a set of reef points. This reduced the mainsail area by a quarter and provided four rigs — reefed or full main, with or without jib. The single main is always used with the mast in the aft position since this is more convenient for changing rig and sailing does not seem to be seriously affected by the imbalance.

In the event of a capsized it is unlikely that a child would be able to right even a small craft, such as the Mirror. He should be



*Reefed main 45sq.ft.*





*Reefed main and jib 65sq.ft.*

instructed to stay with the boat and wait for help, so an attendant craft will be needed unless sailing in a restricted area with shallow water.

The original Mirror mainsheet deadeyes provide a form of safety valve in that a child may not have the physical strength to pull the sheet hard home. This leads to slacker off the wind sailing, the boat is faster, and goes about better but the upwind performance suffers — that improves with time.

The marine lake at West Kirby was chosen for the first solo run. This has shallow water with easy access, a limited sailing area and the onshore wind is relatively steady. The single main was reefed and after a run with two up he was off on his own progressing to full rig within a year.

During the latter stage a few points emerged. His smaller reach required the jib sheets to be tied together, a window in the jib is vital for lookout purposes, there should be some reminder of port tack obligations, wind strength should be force two or below for a five stone child in a fully rigged Mirror, and if you need an attendant craft remember that a lightweight solo helmsman is very, very fast! Two adults in a similar craft will get nowhere near him, an Enterprise or GP14 would be better.

Finally, when junior is a fully fledged Mirrorman (or Mirrorwoman as the case may be) consider getting your second kit — now is the time to start building if you wish to continue your own sailing.

## Tackless sailing

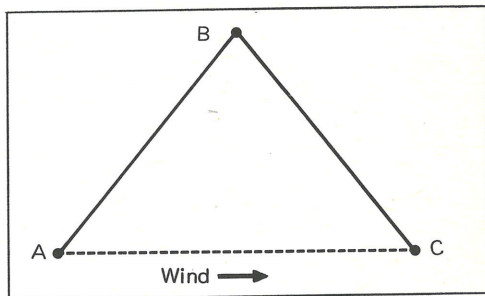
by Peter Barnes, answered by Harry Taylor, Maurice Palfrey and David Wilde.

A few years ago, a well-known Yachting Magazine had for a few months, a great deal of correspondence on a very controversial subject. I know that at my Club arguments became very heated, and were continued week after week. To give food for thought during the off-season and some budding model maker a good reason for a 'project', I suggest . . .

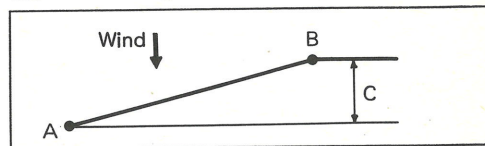
To all our engineers, headmasters and theoretical geniuses . . . *Why can't a wind-mill driving a screw drive, or propel, a boat directly into the wind?*

If you have now stopped laughing, dry the tears from your eyes, and read on.

My views are quite strong, I think, and reason, that it is perfectly possible for these following arguments: a dinghy has two functions — (a) to provide a propelling force via the sails, and (b) to provide a method by which an upwind motion can be achieved. This being the centreboard stopping side, and therefore downwind, slip.



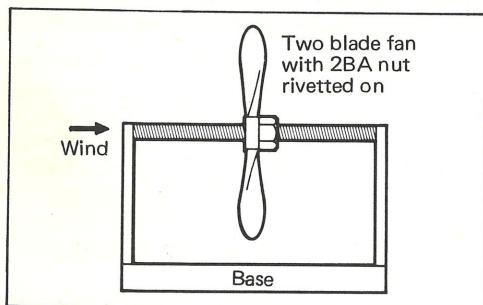
As can be seen from the diagram, a dinghy tacking upwind CB to BA has made a resultant movement directly upwind AC, or, from the second diagram . . .



A dinghy sailing from A to B has also travelled a resultant distance 'C' directly into the wind. From this, a small experiment was



made. If one likened the sail of the dinghy to the blade of a fan and the distance AB in the Diagram to the extended helix of a screw thread, a fan or propellor on a screw thread should move forwards directly into the wind.



This experiment proved positive, so why doesn't it follow that, if the wind can move or draw the mass of the propeller directly towards it, the method could be used to drive a windmill boat directly into the wind, as from the experiment the screw thread is surely only the same as the movement of a screw through the water, given that more backslip takes place?

Any takers?

### THE QUESTION IS TAKEN UP!

by Harry Taylor...

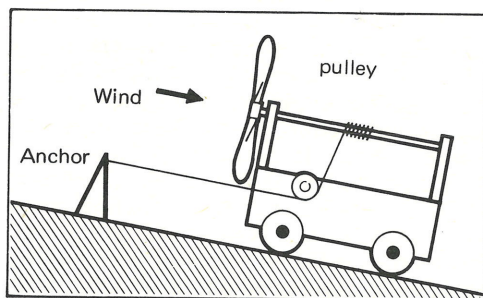
Peter Barnes writes of the amount of correspondence, some years back in 'Yachting & Boating' on the subject of windmill boats. I was foolish enough to contribute, and finished up by having to eat my words.

The argument about the theoretical possibility of sailing dead into wind had gone on for a week or two, when up came a man who said that it was not only possible, but that he had made a model which did it. Not being a great believer in magic (I seem to be one of the few people who won't accept Yuri Geller and his dreadful B.B.C. forks — he can stroke my goose-neck fitting any time he likes) I rose to assert that he was mistaken. You can't go against the laws of nature.

A sailing boat, like any other vehicle, I argued, depends on one of Newton's laws which states 'for every action there is an equal and opposite reaction.' The sails, by deflecting the wind aft, cause a mass of air to be accelerated aft. The reaction to this force propels the boat forward. However,

when the boat is pointed dead into the wind, the wind can no longer be deflected aft. So there is no force to propel the boat forward. I argued that Isaac was nothing if not fair, and would insist on the same rules being obeyed in the wretched windmill which would suffer the same fate as the Mirror which tried to pinch these few yards to the windward mark. My argument went on in rather more detail, but that was the gist of it.

"Not bad," I thought, and feeling quite smug I opened my next issue of 'Yachting & Boating' wondering if there might not be a letter from Mr. Windmill, admitting that he had lied in his teeth. Instead, there was one from a gentleman who reflected that a little knowledge was a dangerous thing, and went on to describe a strange toy which he had made. It was a four wheeled trolley with a string attached. When the string was pulled, the trolley defied Newton and everyone else and went away from you, and how about that?



Having given some thought to what strange mechanism could make the trolley behave in such a perverse way, it suddenly dawned on me that my argument condemning the windmill was as false as he had implied. So I was back in 'Yachting & Boating' again next week — but this time as a suitably contrite pro-windmill man, describing an improvement in Mr. Thingme's trolley which would convert all nonbelievers.

I don't know whether I have learned any lesson from this experience. Where would our interesting discussions come from if, just because we did not know what we were talking about, we kept silent?

by Maurice Palfrey...

In Reflections, we get of the best. Concurrently, we're put to the test.



Is it 'Jeckells' or windmill and screw?  
 Pete Barnes says the latter will do.  
 Let's dispose of this falseness with zest.  
 We sometimes catch crabs; chase red herring,  
 And often sail on the wrong 'berring.'  
 By Deed Poll, please note  
 For Barnes, read Quixote,  
 Jousting mills is for Lads Non sea-ferring.  
 'Into Wind' - an illusion to Sailors,  
 Achieved only by Trawlers and Whalers.  
 The problem is Forces and Friction  
 Barnes theories - a 'mass' contradiction.  
 Let's scupper by way of Self Balers.  
 Make 'Medusa' a right Gorgon grinder,  
 With windmill, screw-drive and sidewinder.  
 Pete B will soon learn,  
 He'll be dropping astern,  
 Let this be his solemn reminder.  
 Can we sail up from Kew down to Chew?  
 Is the answer by Windmill and screw?  
 I'm sorry, One Five Five Oh Oh.  
 The answer is 'Rollicks' and 'Row.'  
 But thanks for your Item, Adieu.

*by David S. Wilde . . .*

I notice your request for 'takers' in the March issue of 'Reflections.' Here is one. In the first place, you pose the wrong question, "Why can't the windmill etc. . . ?" Who says it can't? It can, and does. May I refer you to 'The Science of Yachts, Wind and Water' by a friend and colleague of mine, Bertie Kay - see page 26, fig.7. The relevant text starts on page 25. 'Sails and keels are not the only mechanism to exploit the velocity gradient. Fig. 7 shows a boat driven by a water-screw and powered from the wind by an air-screw, which is travelling directly into the air-stream without tacking. Working models of such boats have been made. The propeller is only like a yacht tacking in both port and starboard directions, at one and the same time. The upper portion of the propeller tacking one way and the lower portion tacking the other.

'A very successful yacht achieving relative speed  $V\sqrt{L}$  of greater than 3, used a four vaned air paddle mounted on a vertical axis having mechanical linkage to feather those vanes against the wind direction. Coupled to this paddle was a feathering paddle wheel on the stern which provided the water drive. This yacht could also proceed directly against the wind.'

There you are! after all the basic theory is quite simple. It requires energy to propel a boat against the forces of resistance (aerodynamics and hydrodynamics) provided one can extract this energy from the wind then the vessel can move forward into the wind. Anyway, there you are, it is theoretically possible and evidently has been done in practice.

*Answer from Peter Barnes . . .*

*I quite agree, that is what I thought I had said! When this argument was originally brought up I went through all the local libraries and found no evidence to suggest a model or craft had been made. We would love to hear more from Bertie . . .*

*by David again! . . .*

Here we go again on the subject of Windmills . . . I have followed up the question of actual models with both Bertie Kay and Hugh Barkla, of St. Andrew's University.

The former provided me with an article from Motor Boat and Yachting, 29th November, 1968, entitled 'A Windmill in the Roaring Forties.' The craft described consisted of two hulls with a windmill, whose blades were at 45°, rotating about a vertical axis and driving, by means of a chain drive, a differential and two paddle wheels at the stern of the craft.

The hulls were 28ft. long, 4ft. beam, and the craft made a voyage from Cape Town to St. Helena (1,700 miles), and then from South Georgia to Crozet (4,000 miles) in 11 days, going 25 knots at times and sometimes being airborne for a quarter of a mile! Well, that's what the article says. All I can say is if you believe that, you'll believe anything!

Bertie Kay did, however, suggest that proceeding into the wind could be easily imagined by thinking of a craft which consisted of two yachts joined together by a long boom along which they can slide freely. If one yacht goes on port tack, and the other on starboard, then the craft will go dead into the wind. As each craft reaches the end of the boom they go about (pivoting about their fastening points) and so on. Somewhat impractical, but it surely demonstrates that such a craft would work.

Hugh Barkla referred me to the 'Readers



Write' page of Yachts and Yachting for 19th September, 1952, which contains two letters from people who have seen working models. One was Austin Farrar, who saw such a model in 1941, the second was from a Miss Rowe, of East Grinstead, whose father made such a craft and she had enclosed photographs of it. And, to cap it all, Hugh told me of Bob Pierson, head of research of Goodyear Tyres in Akron, Ohio, who is going into production with a windmill/propeller boat! So we shall all soon be able to buy one.

I feel there must be more references to such craft and have been told that the Amateur Yacht Research Society is likely to be able to provide details of other ventures into the field.

Anyhow, I don't propose to belabour the issue further.

Finally, let me bounce one more thought around that should keep things humming in the club-house for a while! It is possible to sail downwind faster than the wind . . .

## Winds and weather

by Peter Sowden

Winds and weather are of great interest to all who go down to the sea in boats, and even of interest to those who just use a small area of wet gravel. There are times when the weather can change quite dramatically in only a few hours, and although you may set out for just a quiet poodle along the coast, or to catch a few mackerel, it's always wise to check the forecast first. Though sunny now, an extra jumper or the oilskins might well be useful later on.

We all know that the forecast will not exactly describe the weather in our area of interest. It is a generalisation and there are many local variations, sea breezes for instance, or the drizzle and fog on one side of a range of hills and the broken cloud and sunshine on the other. The meteorologist will find explanations for these phenomena in the laws of physics, the best the rest of us can do is to keep our eyes open, and in unfamiliar places our ears too. There are usually one or two of the 'locals' familiar with local conditions and it can be wise to heed what they say. There

is usually a number given in the front of the telephone directory from which an up to date local area forecast can be obtained for the price of the call.

However, before worrying about the variations, it is helpful to know a little about the general picture as given by the Weatherman on TV, or as indicated by the weather maps given in national newspapers such as the Daily Telegraph. If you understand these things please skip now to the next article, if not, I hope what follows may be of some little assistance.

First those curious symbols used by the TV Weatherman. These are intended to show the most significant weather likely to occur over the different areas and are often moved across the map to show changes with time. Symbols have the following meanings:—

**TEMPERATURE:** Red figures on a yellow background give positive temperature in degrees centigrade. Black figures on a light blue background give freezing temperatures, i.e. below zero centigrade.

(15)



**SUNSHINE:** The yellow symbol represents the sun; the red figures in the centre show a temperature of 25 degrees centigrade.



**CLOUD:** A white cloud symbol indicates fine weather clouds that may be relatively thin and patchy.



A black cloud represents the thicker and more widespread clouds often associated with dull weather.



**SUNNY INTERVALS:** The sun symbol, used in conjunction with a cloud in this way means some sunshine as well, particularly if the white cloud symbol is used.



**RAIN:** The dark blue tear drop symbols beneath the cloud indicate rain.



**RAIN SHOWERS AND SUNNY INTERVALS:** A combination of rain, cloud and sun represents sunny intervals and rain showers.





**SNOW:** The white snow symbols beneath the cloud indicate snow.



**SLEET:** The rain and snow symbols together beneath the cloud indicate sleet.



**THUNDER STORM:** The symbol of a black cloud with a yellow flash represents the possibility of thunder and lightning.



**WIND SPEED & DIRECTION:** The black symbol represents the wind speed and direction, the speed printed in the centre in white is in miles per hour.

## FOG

**FOG:** Fog is not represented by a specific symbol, it is indicated by words on the map in the general areas likely to be affected.

More detailed information may be gained from the contour charts. There are usually two of these, one showing the actual pattern drawn from recent observations, the other showing a forecast pattern for 24 hours later. Drawn on the charts are:—

**Isobars** — thin lines like the contours on an Ordnance Survey map. These are contours of air pressure. Areas of low pressure, called

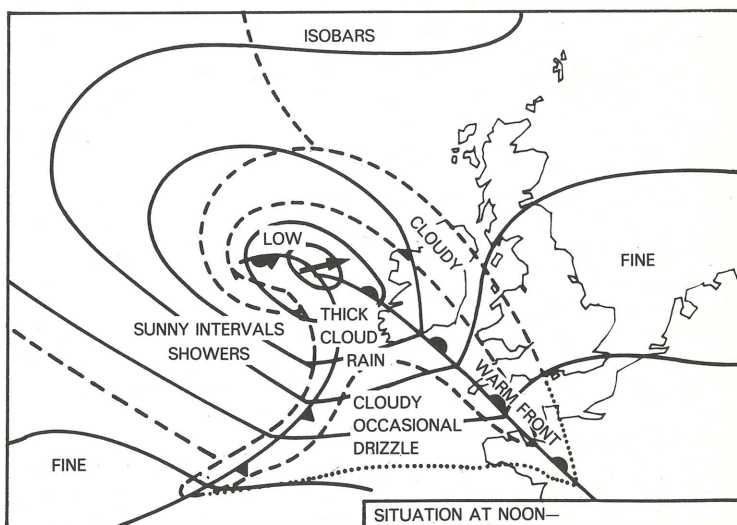
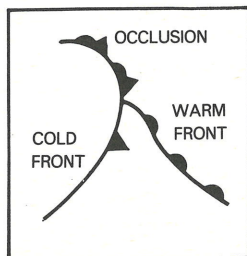
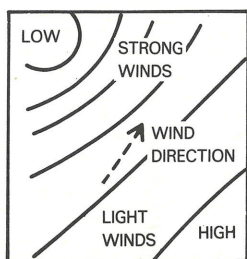
depressions, usually indicate poor weather and often strong winds. Areas of high pressure, anticyclones, are often accompanied by good weather. Arrows are used to show expected direction of movement of the centres.

Most useful is the indication given by these lines of wind direction and speed. It is found that winds blow roughly parallel to the lines (slightly backed) and the spacing between the lines indicates the speed — the closer the lines are together the stronger the wind. Direction is anti-clockwise around low pressure.

**Fronts** — heavier lines with identifying symbols as shown. These are used to indicate the boundaries between masses of air with different characteristics.

These lines may be thought of as showing bands of cloud and rain which move along with the wind. There is often a sharp change of wind direction and speed as a front passes. Symbols are drawn on side towards which front is moving.

Thus a depression approaching the British Isles may well have weather associated with it as shown below. All you have to do for an estimate of likely prospects, is move the pattern along in your mind's eye and note how this affects your area of interest. The 'actual' and 'forecast' patterns give an indication of direction and speed of movement.





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# Taking your Mirror abroad

by Hugh Jones

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If, during the height of the holiday season, you stand on the white cliffs of Dover looking down on the harbour below, you will not have to wait long before you witness the splendid sight of a Mirror setting out for the French coast. The fact that these boats tend to be upside down on the roofs of their owners' cars waiting to board the ferry does not prevent the cliff-top observer from sensing the excitement of taking a Mirror abroad.

If, like me, you want a good excuse for avoiding the terrible sight of all those red sails in front of you at the National Championship, then you may be tempted to join the real elite of the Mirror fraternity. Each year, despite the falling pound and the rising cost of petrol, this small but growing band sets out for foreign parts to launch their craft from golden, sun drenched beaches into sparkling blue seas. At least, that's the way they remember it when they get home.

My family (a wife and three children) have travelled abroad for our summer holiday for many years now, but our first venture to the Continent with our Mirror on the roof of the car was undertaken with some trepidation. We discovered that you do not have to pay extra for the boat on the roof of your car on the short sea routes from Dover, Ramsgate and Folkestone. If you tow your boat you will have to pay for the extra space it takes up but a family of five in a boat topping car of 14 ft. would have to pay about £55 return to cross the Channel by Hovercraft from Ramsgate to Calais.

Should you decide to venture abroad with your Mirror then it is well worth while investigating the sailing potentialities of your intended holiday area before you make any final decisions about hotels or other accommodation. Some supposedly 'sea front' or 'lake side' hotels are a long boat's drag away from the water but, in contrast, a good many have their own launching and mooring facilities. I have to admit that my own

experience of Continental hotel living is about as limited as my bank manager's sense of humour, so our financial resources usually limit us to a holiday which combines camping with sailing. But before talking about the delights of continental sailing-cum-camping I should like to mention a few hints on the practicalities of roof-topping a boat around Europe.

It is possible to stow quite a quantity of light but bulky objects such as sleeping bags and life jackets inside the boat while travelling. These need to be lashed very securely to the underside of the thwart or pushed into the forward stowage compartments. Particular attention needs to be paid to the roof rack when undertaking long journeys and nuts, bolts and lashings should be checked regularly. The gutter mounting kind of roof rack seems to be the most reliable: we once arrived in a Norwegian camp site with bits of our 'rubber sucker' type scattered around the gutter of the car. By some miracle the suckers had carried on sucking even when the supporting stays had come unscrewed. To be really certain that your boat will not part company with you at 60 mph on the Autostrada del Sol, it should be secured fore and aft by ropes leading to the bumpers of the car. As a natural pessimist I prefer to secure my Mirror directly to the car at the sides as well and I have drilled  $\frac{1}{4}$ in. holes in the gutter to facilitate this. Lifting the boat on and off the car may prove rather difficult unless you have a family of budding weight-lifters. The lifting problem is eased considerably by lashing spars and oars to the side of the roof rack rather than actually inside the boat.

Life jackets are a necessity: even though winds are light and the water warm they should, at least, be kept in the boat in case conditions change. You should also take your insurance and measurement certificate in case you are asked to produce these at any time. This has happened to us once. We were drifting along the coast of Yugoslavia one day when a police launch approached and we were asked to produce the 'ship's papers.' Apart from some old chocolate wrappings and a sailing instruction sheet from an open meeting of long ago there was not a ship's paper in sight. After 15 minutes of question-





ing we were reluctantly released.

Finally, I should like to say something about possible sailing areas for a Continental Mirror cruise, but wherever you decide to go, it is worthwhile contacting the local Mirror Class Association who may be able to give you some useful advice; you may even be able to join in some racing if you feel inclined. Only one day's drive from the Channel Ports, Brittany offers some good sailing but the tides can be rather strong and camp sites tend to be crowded during the height of the season (from late June to about the third week in August). The Baltic coast of Denmark and Northern Germany is considerably less crowded and tides are not a problem but, although pleasant sandy beaches abound, pollution is becoming a problem in the Baltic and we have experienced some unpleasant odours in the Gulf of Bosnia off the Swedish and Finnish coasts. The lakes and fjords of Norway and Sweden offer some superb sailing and the further north you go the less crowded it gets: on the lakes north of Bergen people are astonished by the sight of a boat with sails. However, as in any mountainous region, it is necessary to keep a good lookout for the approach of sudden squalls.

There are plenty of good sailing lakes in Holland, Germany, Austria and Switzerland and the French are busily adding to their

natural collection of lakes by damming rivers to produce some spectacular reservoirs.

In south and central France there are many such lakes and reservoirs, some of them enormous and most of them have camp sites on their shores. There are also plenty of places where you can 'camp rough' if you want to avoid paying camping fees which, for my family of five, work out at between £1.50 to £2.00 per night.

For really warm and pleasant sea sailing and fine weather the Mediterranean is hard to beat and the Mediterranean coastlines of Spain, France and Northern Italy are only three or four days driving away. Unfortunately, Mediterranean camp sites and hotels are crowded during July and the first two or three weeks of August.

A boat can extend the scope and enjoyment of a holiday quite considerably; parts of the shore inaccessible by road can frequently be reached by boat and off-shore islands are often within half an hour's sailing time away. Some years ago we discovered such a group of sandy islands in an arm of the Aegean. Each day we would load the Mirror with grapes, peaches, wine and other vital provisions and set off for a day spent swimming, eating and just lazing in the sun on our own uninhabited (except for us) islands.

See you on the cross Channel ferry.



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# Cruiser Associations

by Mike Coleman

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The R.Y.A. Class Associations' Committee, on which I have the privilege to serve, currently represents some 40,000 owners of Dinghies and Cruisers, which if placed end to end, would stretch for about 127 miles. In terms of numbers only, we of the Cruising Class Associations make up only about 6% of the total owners.

Because we are small in relative numbers we may be accused of 'keeping ourselves to ourselves,' and it is possible that many do not understand what we do and why.

All Boat Associations exist because of pride in ownership. We have all put our money, according to our choice and the depth of our pockets, into a particular type of boat, and we will defend our choice, be it right or wrong, against all comers. The herd instinct causes us to group into classes, be it Mirror or Macwester or what-have-you. Our basic drive is the love of the water, which we all share, and the satisfaction of using the fickle wind to best advantage.

How we use it, gives us the cardinal difference between Dinghy and Cruiser Classes. The Dinghies generally to race on inland or estuary waters. The Cruisers to get from (a) to (b) on estuary waters or the open sea, where we take our place amongst all those 'that go down to the sea in ships.'

Cruisers seldom race, and apart from an annual rally or sail in company, organised by a Class Association, rarely congregate.

Dinghies spend most of their time on dry land, whilst Cruisers spend most of their time afloat.

Cruisers have 'full life support systems' to go to sea, and to stay there for weeks or even months. With proper safety equipment and a competent crew, they can go well out of sight of land or visual navigational aids, without hazard to anyone.

As far as my yacht is concerned, I regard it as a second home, which we move from place to place, averaging 1,000 miles each year.

Because Dinghies are essentially day-boats, and fast day-boats at that, they cannot safely endure long passages. Their owners derive their satisfaction from racing against other Dinghies of their own kind. To be fair in any race every competitor should have the same chance of winning. Hence Measurement and abiding by a strict set of rules and procedures, has rightly become the main pre-occupation of Dinghy Associations, to — together with the considerable effort put in by a dedicated group of people in organising races and regattas.

Cruisers, on the other hand, apart from the basic hull and rigging, are unique unto only themselves. If I put another 20 sq. ft. into my genoa, I am breaking no rules, and far from arousing anger or a feeling of betrayal from my fellow Cruising owners, I get either approval or complete indifference. Because of this, Cruisers are not regimented as Dinghies. Cruiser Associations therefore reflect this, and tend to be more loosely joined together.

Another major difference is the effect that distance has on getting together. If I want to leave my home base on the River Medway, to sail with fellow members in say, the Bristol Channel, I have to circumnavigate most of Southern England to get there, at an average of say 4 knots, weather permitting. If I were a Dinghy owner, I would have towed it by road, at whatever the legal speed is for such things, in more or less a straight line. I would then be able to meet and race against my compatriots in the Bristol Channel area and be back home before the Cruiser had passed the Isle of Wight.

The result of this is that where the Dinghy and its Associations tend to be gregarious, the Cruiser and its Associations tend to be insular. It is virtually impossible for us to meet more than a small fraction of our fellow membership. The Dinghy is mobile and we are too big to travel overland easily. A 36 foot mast and 7 tons do present certain limitations, and re-tuning a mast once lowered is not a 5 minute job.

Given these limitations, what then is the point of having Cruiser Associations? Like the Dinghy Associations, common interest. The more we learn, the more we realise there is to learn, and we enjoy learning. We benefit



from our Association Journals, and our infrequent meetings with our fellow members because we swap experiences. Our Associations provide the means of doing this, not perhaps with the dynamics of Dinghy Associations, but serving a different clientele.

Generally, Dinghies and Cruisers only meet in estuary waters, and this can be a terrifying experience for both parties. As a chauvinist cruising man, sailing back up-river on a Sunday afternoon, to be confronted with those forests of little red, white and blue sails, used to frighten me more than a supertanker at 20 knots in the shipping lanes, in a Force 6. I had failed to remember from my long past, in 14 foot Naval Dinghies, that in comparison with me, the Dinghy can turn 'on a sixpence.' For us, not the satisfaction of first around the windward mark, for we are slow, cumbersome, in-the-way, and crossing their race track. When Dinghies disappeared under my bows, or aimed themselves for my quarter at 10 knots from only 20 yards away, I used to die of fright. There was no time for 5 short blasts, or explaining the Collision Regulations to them, and to my shame, I recall shouting words that can only have lowered myself, and Cruisers in general, in their eyes. I was scared, but they were not.

Emboldened over a jar, after one of the Committee meetings, I raised this topic with the Secretary of one of the larger Dinghy Associations. "No problem," he said, "if I want to pass under your stern, I must head for your quarter. When I get to you I can flick my rudder and pass under your stern, but if I set down too much, I lose valuable feet." I tend to think in cables, not in feet, but his point is very valid, and one not generally recognised by Cruising people.

The only plea I would make to Dinghy sailors, is, don't frighten us too much. We can't stop or alter course quickly, and the majority of what I could describe as the 'Summer Cruising Fraternity,' are probably not as experienced helmsmen/helmswomen as you are.

Can we reconcile our differing aims? Possibly never, but as each journey begins with a first step, there may be a way.

If I can quote from personal experience, which may well have more general application. Our Macwester 27 sleeps five in comfort, six easily, and when not underway,

two more in the cockpit under the boom tent. The same or better is true of many Cruisers. We can cook, have a loo, 40 gallons of fresh water, a 25 h.p. diesel auxilliary, life-raft and full safety equipment, a diesel stove, stereo tapes and a V.H.F. radio, so life is not all that dangerous or Spartan, even in the depths of winter.

By sharing our life support systems which the Dinghy people lack, we can both get to know how the other one operates. We usually have a crew of 3, so we could easily take away with us for a long weekend cruise, 2 two-man Dinghies, and go to places that Dinghies cannot easily reach. We would be the Safety Boat and life support system. If the wind failed or got too strong, we could always tow the Dinghies back, without hazard to anyone. The Dinghy people could take turns at sailing the Yacht, and in navigating, whilst we might be allowed to sail one of the Dinghies occasionally, under proper supervision, of course.

Familiarity should breed understanding and consideration, because we currently suffer from unfamiliarity which continues to breed segregation and mistrust.

Cruisers could also act as Safety Boats at Dinghy Regattas, when local club facilities are usually stretched beyond the limits of effective safety.

More and more Cruising yachtsmen are studying for and qualifying as R.Y.A./D.T.I. Yachtmasters (Offshore). To do this we have to know quite a lot about yachts and the sea, and to prove it practically as well as theoretically. This does not make us different people, but shows that we care about what we are doing, and want to do it the right way. For us who regularly 'go foreign,' our joy at making Flushing or Dieppe, 'right on the nose,' must equal the joy of the Dinghy sailor who wins that critical race, without being disqualified! We are rather like the Old Bull, we may take longer to get there, but we have longer to enjoy it when we do.

In conclusion, Dinghies and Cruisers can learn a lot from one another, and can have a lot of fun doing it. For Dinghy sailors who may not yet have had the opportunity of sampling Cruiser layout, our accommodation includes one double and one triple bunk. Who says Cruising is dull?



# RACE TUNING









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# What is meant by 'One design'

by Victor Shaw

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The Mirror Dinghy is, as we all know, a 'One Design' class dinghy but this title is used so familiarly that the true meaning of it escapes a great number of people. I have been asked as the official representative of IPC Newspapers, who not only launched the Mirror Dinghy but brought it to the great success story it is now, to explain simply what the words 'One Design' mean and their implementation so far as my Company, the holders of the Mirror Dinghy copyright, is concerned.

Basically, the interpretation of the words is that of a single aim — the aim to foster a class all the boats of which are as nearly identical as possible with the intention that, during racing, it is solely the quality of the helmsman which is tested and not that of the boat itself. It is a recognised fact that, in true sport, one seeks to assess the physical and mental potential of human beings weighed against each other; it follows therefore, that any equipment they use, be it a rifle, a tennis racquet, boxing gloves or a sailing dinghy, should be equated amongst the competitors. To this end most sports have certain regulations governing the weight and size, etc., of impedimenta used in competition.

We are concerned, though, purely with a sailing boat which is somewhat more complicated than many pieces of equipment used in other sports. Consequently, the number of rules governing its composition are more profuse and more complicated.

A lot of people seem to resent the fact that there are rules at all when, in reality, those very rules work on behalf of the individual rather than against them. The only person against whom the rules work is the man who tries to win competitions by sharp practice if not actually cheating.

The role of the Daily Mirror, as copyright holders, is to ensure that everybody who has bought a Mirror Dinghy has an absolutely fair deal and that the resale

price of their boat remains high. This can only be achieved by holding rigidly to 'One Design' principles and these principles must take into account the aims behind the original conception of the boat's design. Let me remind you of what the Mirror Dinghy was designed for in the first place; it was designed as a safe, inexpensive, versatile, family sailing dinghy which could be used for pottering about under single sail or two sails, for rowing, for outboard motoring and for racing. I would estimate that, of 51,000 boats or more now in existence, the maximum number which race regularly around the world is about 10,000 and working this sum out a different way altogether, it leaves 41,000 boats which are not racing regularly. The other important factor to remember is that the term 'One Design' only really functions for boats which actually race — after all, if a boat is not going to compete against its fellows then there is no reason at all for it to be identical. Our job at the Daily Mirror is to act as a sort of combination Chief Constable-cum-Ombudsman to ensure that all the laws are kept but those laws are fair to everyone.

The strange thing about the measurement rules is that some people who race their dinghy regularly somehow project themselves into a fantasy world where their Mirror becomes a Flying Dutchman or a Tempest or some other highly sophisticated racing craft and they attempt to substantiate this fantasy by introducing to their boat equipment designed for the high powered sailing boats. It is often said that men are only small boys at heart and after all, how many little boys try to substantiate the wild west image by wearing a sheriff's badge and toy six guns. I have many experiences of this sort of attitude coming to light at the Earls Court Boat Show when all the top dinghies are under one roof: it is a common occurrence for someone to come on to the Mirror Stand and say "I have just seen a marvellous device on a 505, is it allowed on my Mirror Dinghy?" In the excitement of acquiring a new piece of gear or a new shaped sail one important point is conveniently forgotten. If, for instance, I discover that a self-jamming, fluted rebeck will make my Mirror Dinghy go faster and give me an edge on everybody else in the fleet this obviously saves me developing my





own skills and yet achieves the superiority that my competitive soul demands. The irony is that eventually, if no watchdog is there to prevent this happening, a rule is passed to permit everyone the use of a self-jamming, fluted rebeck, returning me to square one from whence I commence a fresh search for some other piece of equipment to give me the edge once again. In the end, of course, I have a boat of simple design, built to take certain stresses, completely overlaid and over-strained to the degree of being dangerously unsound.

From a personal point of view, my aim is that everyone should enjoy their Mirror Dinghy and obtain the utmost benefit from

it while they have it without jeopardising its racing aspects and to ensure that, when a person decides to part with his boat, he gets the best possible price for it — above all, I must keep to the basic principle that the Mirror Dinghy is one of the safest boats afloat and I must make sure it stays that way.

One final word! Whenever I give opinions on the Mirror Dinghy, you may be sure that these opinions are completely unbiased because I neither race them to win cups, nor manufacture them to make money and so have no personal axe to grind whatsoever, I only hope that my efforts result in more enjoyment for more people.



# A racing machine

by Graham Ellis

## The Basics

No doubt many of you have spent months, even years, playing about with every moveable object, ranging from mast step to clew out-haul on your Mirror, in order, you hope, to make it faster than before. What happens? "I think she's going a bit faster" you say, then at an Open Meeting you find you were wrong, and its back to the screws and screwdriver.

The following mass of words is intended for the chap who has an ambition to become a champion — use of psychology note:— Before you have any chance at all, your boat must have these essential features:—

1. Centreboard should be maximum length and width, and as strong as possible. The corners should be slightly radiused. Also, of course, leading edge should be rounded and the trailing edge faired to a fine edge (keeping within the Measurements).
2. Centreboard case should be of minimum height, so that you obtain maximum depth with your centreboard. (This can quite easily be corrected on an already built boat).
3. The skeg should be faired down to minimum dimension, and the hole streamlined, again keeping within the Class Rules.
4. The rudder blade should be faired down similar to the centreboard. The leading and trailing edge of which should be parallel and raked vertically.

For a competent helm, the blade area should be a minimum, however this is not essential.

5. Now ensure that the centreboard, skeg and rudder blade are all perfectly in line when viewed from behind (ie., as if you were looking at the boat from the underside when it is afloat).

6. The bilge pieces should be faired down to minimum dimensions.
7. All surfaces in contact with the water should be smooth.
8. Mast should be stiff and of minimum diameter (get yourself a metal mast!)
9. Boom should be shaved down to near minimum periphery, but should not be too bendy.
10. Gaff should be shaved down to minimum dimensions and preferably be flexy. In shaving down, try to take more off the sides of the gaff, to decrease windage and provide a better airflow. Also at the lower end (i.e. where the gaff jaws are) shave the leading edge down to obtain a minimum gap between the mast and the mainsail. The small gaff-band should also be fitted.

Once your boat has these features, you now have a boat with a potential to be as fast as any Mirror on the water — but the rest is up to YOU! the helm and crew.

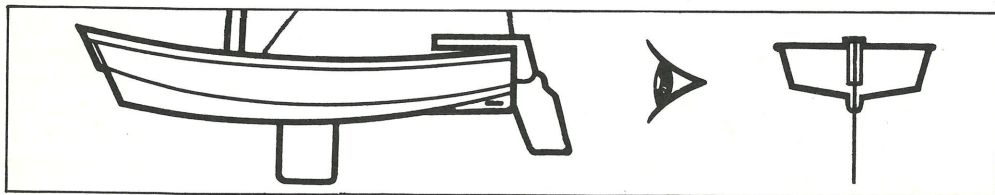
## Fiddling put to Theory

In this day and age of technology, there should be a theoretical way to rig the boat — after all, the sail maker does it, why can't you? Enough of that psychological waffle, down to facts again . . .

The ultimate that you are looking for is for every square centimetre of both main and jib to be 'pulling' positively. To show this, the boat should be sailed on a close hauled tack, then, as the boat is slowly turned through the eye of the wind, the whole of the luff on both sails should back simultaneously, when the boat is perfectly upright and no weather or lee helm is felt.

No doubt you have read many times that the optimum mast rake is between 6in. and 9in., fairleads placed such that more tension is on the foot than on the leech. This is perfectly true, but very general.

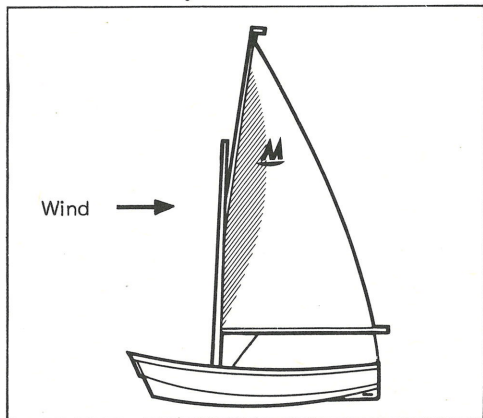
How do we obtain these positions more accurately? My theory is that the boat should be taken to some open space, on





land, on a day when there is ample wind to fill the sails.

1. Ensure that the boat is horizontal.
2. Rig the main only, and set it for beating, then stand aside the boat and slowly let the main sheet out, watching for the whole length of the luff to back simultaneously.



Remember here you have the mast rake, kicking strap, tack and clew positions to alter.

Rig the jib. The object now is to put the jib on to serve the purpose of increasing the flow of air around the leeward side of the mainsail. The tack of the jib should be within 1in. or 2in. off the deck, if this is too high, the slot at the top of the jib will narrow rapidly and backwind the main. Then with your crew assisting, ensure that the boat is always pointing at its maximum (therefore the need to have an open space and a steady wind). Hold the jib sheet by hand and move around, varying it from gunwale to the inner edge of the side tank, taking great care to find the position when both luffs back simultaneously. It will be useful to note that the leech of the jib should form a parallel slot between it and the main. Having obtained a position, screw on the fairleads. If all has gone well, and this being your first attempt, you should be near to the ultimate sail setting. It may sound a simple process to go through, but as usual, in practice it is not. Thoughtful positioning is needed.

Once you have the perfect racing machine, the next 70% to 80% of the race is up to YOU! — getting a good start, picking out windshifts and 100% concentration!





# Reflections on tuning

by Nick Hodshon

From 1966 to 1968 I was working at the Daily Mirror, and although Secretary of the Mirror Sixteen Association, I was, of course, very involved with your Mirror Dinghy and pioneered the Mirror 14 but left the Paper when it was reaching the design stage.

Tuning the boat really does start at the basics of getting the hull and rig right, and I will also give some thoughts on getting the crew and helmsman tuned in.

## Underwater — Hull

It really is essential that the underwater surfaces are as fair as possible, the skeg should be to the minimum size allowed by the rules, and the centreboard case constructed so the slot is again the minimum size permitted, leaving sufficient room for the dagger board to freely slide up and down.

It is important that the keel bands, fibreglass tape and heads of screws be filled and faired in smooth. I find the soft grade of Isopon ideal for this purpose as it is simply applied, quickly dries and rubs down to a smooth surface very easily. Having got the surface reasonably good I finish off with two quick coats of Helmsman's 'Graphspeed' — this goes on very thickly, fills and covers a multitude of sins and is very easy to rub down — the one draw back is that rubbing down is a messy job but it does not take long and saves a tremendous amount of time compared with conventional paints. Once the bottom is fair and reasonably smooth I do not worry about polishing, it has never been proved to increase boat speed and does make life difficult when capsized.

## Underwater — Rudder and Centreboard

These items probably have more effect on performance than any other, it is essential that they are stiff, not twisted, and that the rudder blade is not slack in the stock. Conventional plywood is really a poor material because half the grain in the veneers runs fore and aft when, for maximum stiffness, the grain must run

vertically. From the boat builders point of view plywood is excellent because of its antiwarp properties and availability. The keen dinghy sailor should be able to find a good piece of seasoned mahogany by shopping around boat yards and timber merchants. Provided it is well seasoned and has no sap (whiter and soft) it is unlikely to warp and will definitely improve your beating performance in strong winds. It is, of course, important that you taper the edges to the maximum permitted by the rules as follows:—

1. The leading edge should be rounded to approx. 3/8in. (9mm) diameter.
2. The trailing edge should be 1/8in. (3mm) completely flat tapering to the maximum. Tank tests have proved this acts as a feather edge and is not so delicate.
3. The bottom edge should be semicircular.

Remember to carry this taper well up to the keel line which must be the same on both sides, if not the board will vibrate at high speeds which it will also do if it is warped.

The rudder stock should be kept out of the water, so keep it as small as possible at the bottom and the pintles as high as possible on the transom. This will, in fact, reduce the rudder area, which means you will get out of control quicker than usual, and perhaps this is a move only for the more experienced.

While talking about the rudder, I must emphasise that there must be no play between the end of the tiller in your hand and the bottom of the rudder blade.

A good idea is to incorporate formica washers either side of the rudder blade, this considerably reduces friction with the inside of the rudder stock. This in turn enables you to have the pivot bolt done up much tighter which reduces play in this joint. While on the tiller, fit a good universal joint to the extension — it does prevent breaking them.

The other area where play develops, is where the tiller drops into the tennon on the top of the rudder stock. The fit cannot be 100% and if you do happen to push down on the tiller while sailing, the brass pin bends which is not good. The answer is to scrape the varnish away and glue and screw the tiller permanently onto the rudder. It will still stow inside the boat with the blade raised, and the improvement to handling is



fantastic.

The last attention to the underwater area is the self bailers. I favour the Elvstrom type which should be sited under the thwart where they are unlikely to be stepped on. When the bailer is in the raised position, it must be absolutely flush with the underside of the hull.

#### **Above Water**

The outside of the hull should be reasonably smooth but once again do not worry about polishing to an ultra good finish — make sure everything else is right first.

The inside of the hull, tank tops and sides and cockpit floor should be well varnished (or painted if badly stained) to prevent water soaking into the wood. The cockpit floor should be well sanded (sprinkle silver sand onto the wet varnish) to prevent slipping.

Tremendous strain is put onto the centre-board box and this must be very solidly fastened to the centre thwart to prevent any movement. To finish off the hull you must check that all the fairleads, cam cleats and toe-straps are in the right place, that they work correctly and will never, never pull out!

#### **Rig**

The mast should be minimum size and weight, but it is even more important that it be stiff, particularly for heavy weight crews, it should not bend even in the strongest winds. The gaff should again be stiff unless the total crew weight is below 15 stone when a bendy gaff will make the boat easier to sail in strong winds. The boom should be as stiff as possible. It is an advantage to increase the purchase of the standard kicking strap to 2:1, the maximum allowed. Use of a jamming block ensures that it can be quickly and easily adjusted. A rule of thumb for tensioning the kicking strap is just hard enough to keep the leech of the sail tight, if the leech is falling off to leeward tighten it until it just stands up to be level with a line from the end of the boom to the end of the gaff.

The jib halyard tension should be just enough to take the wrinkles out of the luff of the sail, any more tension and the luff in the sail will be pulled forward and you just will not point at all.

I am a great believer in woollies, not the departmental store, but lengths of wool

which are attached to the sail to tell you that it is set at the correct angle to the wind. The simplest way to attach these is as follows:—

1. Take approximately 9in. (235mm) length of wool and tie a thumb knot in the middle, preferably black or yellow to stand out on red sails.
2. Thread one end onto a needle.
3. Sew through the jib approximately nine inches behind the luff and clear of the seams so that the wool will not hang up on the stitches.
4. Pull through until the knot pulls up to the sail material.
5. Take off the needle and tie a thumb knot in that side as close to the sail as possible.

#### **Sail Trim**

I suggest two woolly tell-tales approx. 3ft. up from the foot of the jib and down from the head. If both windward woollies do not lift at the same time when you luff the boat towards the wind, the fairlead is in the wrong place. If the top one lifts first the fairlead is too far aft and vice versa. On the mainsail put them about midway between the luff and leech roughly in line with each batten pocket.

When sailing on a reach keep adjusting the sail so that the woollies are flying horizontal. If the windward one flutters pull the sheet in, if the leeward one flutters let the sail out.

#### **Sailing to Windward**

It is important that the sails are trimmed together to suit the wind conditions. This is basically arrived at by jib sheet tension. In strong winds pull it in tight and jamb it, in light winds pull it in hard and then ease it about 3 inches and jamb it. Steer the boat so that the woollies on the jib fly level. Steer into the wind if the leeward one flaps, away from the wind if the windward one flaps (if you cannot see the leeward one keep the windward one on the point of flapping). Sailing this way, adjust the mainsheet until woollies on the mainsail react at exactly the same time — both sails are now tuned together and will work with maximum efficiency.

#### **Inboard Sheeting**

I first came across inboard sheeting when racing Solings in 1971, and we spent many hours developing the technique of beating



with eased jib sheets. The natural tendency is to 'graunch it in' which is disastrous for boat speed. Remember that the closer in the jib is sheeted to the centre line, the more twist is required in the sail, and therefore the less tension on the sheet. To find the correct setting, I discovered the following procedure solved most of the problems: sailing to windward in flat water in a steady force 2, sheet in the mainsail as close as possible and sail to windward with the windward woollie just lifting; slowly pull in the jibsheet until the woollie lifts at exactly the same time as the one on the mainsail; mark the jib sheet (with a felt-tipped marker pen) either at the fairlead or jambcleat so that in future the crew can immediately cleat it in exactly the correct position. Also mark the sheet where it goes through the clew cringle so that it is always attached at the same place. As the wind increases, and more particularly the water gets rougher, it is necessary to widen the slot between jib and mainsail to prevent stalling — this happens automatically as the mast bends, but only to a certain extent — and is achieved by either moving the fairlead aft or outboard. The simplest is to go back to the old position on the gunwale — remember, however, that Mirror Class Rules of Measurement only allow one jib sheet lead and jambcleat each side, and forbid adjustable fittings in this area. With inboard sheeting, don't forget to lead the sheets inside the shrouds.

The helmsman must concentrate on keeping the boat as close to the wind as

possible without the windward woollies flapping. This demands constant tiller movement to luff up and bear away. The crew should keep a look-out for other boats, the next mark, etc., etc.

The boat must be kept upright at all times with the crew sitting close together roughly in the middle of the boat so that the bottom of the transom is just kissing the water. In stronger winds, when the boat is going faster, it is possible to sit a little further aft without depressing the transom and this will help to stop the flat bow slamming into the waves.

### Off the Wind

Trim the sails constantly as previously described, while keeping the boat upright and sitting as far aft as possible without depressing the transom. The centreboard should be about half way up, more exactly have just enough down to prevent leeway. The most common reason for lack of control and capsizing is the rudder blade lifting. Keep it down by having a positive downhaul.

### Starting to Race

Watch the club champion closely, try to rig your sails the same way. Stay close to him at the start, try to follow him as much as possible while keeping your wind clear. Each successive race you should be able to stay with him a little longer until one day, who knows, you will pull out and overtake him on the last lap. Suddenly all that preparation and concentration will be worthwhile.





# Centreboarding

by John Reece

The Forces which try to push a dinghy to leeward are at their maximum when close hauled, and lessen as you bear off, until when running, there are hardly any at all. The wind thrust on the sails is converted to forward motion of the hull by the centreboard, hull shape and rudder. The most important being the centreboard. The drawback is — the more the centreboard is lowered to counteract the slip to leeward, the greater the drag, or slowing effect on the hull owing to the extra wetted surface area to be pushed through the water. It follows, therefore, that the less the centreboard is lowered, combined with the proper adjustment of sails, the faster the dinghy will be propelled along.

How much should it be lowered? As little as possible — enough on a beat or reach to prevent leeway, and on a run to stop rolling. This is usually three-quarters or completely lowered on a beat, half on a reach, and about a quarter on a run. Many dinghy sailors mark their boards with these divisions so that there can be no mis-understandings with the crew.

Let us try to illustrate how correct use of the centreboard on all legs of the course can help us stay up with the leaders.

Start with a centreboard the maximum size permitted by Class Rules, and very, very smooth. The leading edge is rounded, not sharp, and the rear is feathered off from two inches in to one eighth cut off; this one eighth width at the rear is to prevent turbulence as the water flows over and leaves the board. It also saves the shock-cord being cut. A piece of plastic tubing over the cord also stops wear.

A puff of blue smoke, flags lowered, and off on the first leg of the course, sailing close-hauled to the windward mark. Of all the points of sailing, the beat to windward is the most important; more time is spent on this leg than any other. Those whose dinghies point higher, and foot faster, and in consequence arrive at the windward mark first, are more often than not those who win.

The board is at its lowest, the boat being

sailed to as to keep the board vertical. This is very important — the more the boat is allowed to heel, the less effective becomes the board; not only is it not low enough to be most resistant to leeway, but the angle of attack is wrong and it will not produce the lift to windward which should be achieved by the beautiful dynamic shape of the hull. Arriving at the windward mark in the lead, ease sheets to bear off on a broad reach while the crew raises the centreboard to the halfway position.

At this point, I should mention that we are lake sailing. Sailing on the sea requires a different technique with waves and currents to contend with.

Right — so back to our lake with its shallows and geographical wind shifts, those strong puffs which always seem to catch us unawares as we leave the shelter of the islands. The centreboard is raised to halfway, and looking back to the mark there is a nice straight wake, indicating a good course with no leeway. Up comes the board a little more, for extra speed. Still maintaining the lead, arrive at the gybe mark. A warning here, if the wind is very strong and things are going to be a little hairy, raise the board until only 4 or 6 inches are in the water, draw the mainsheet in so the boom is off the shrouds and while turning let the crew throw over the boom. No half-hearted throw here, a real scruff of the neck type of heave. As the centreboard is up the boat will slip sideways, whereas if it was down it would tend to trip over itself. Remember — strong winds, up centreboard.

Once rounded and heading for the run down wind, up comes the board to leave just a quarter in the water. In smooth water and a gentle breeze, raise the centreboard a little more. All goes well until the stronger winds in the middle of the water where the boat starts to roll from side to side. Immediately, lower some board until the rolling stops. Rolling slows the boat more than having extra board down.

At long last comes the final windward leg, but now the winds have grown very much stronger; towels and changes of clothing come to mind. Both helm and crew are fully extended, and it is still difficult to hold the boat up, water is coming over the gunwale; progress to windward is very slow.





There are two reasons for this — Firstly, wind is being spilt from the sails in order to prevent capsizing, and secondly, the drift to leeward, owing to the inclination of the centreboard, is alarming. What to do? How to compete now with the heavyweights usually passed in drifting conditions and now rapidly catching up? Try this — pull up the board perhaps 4 or 6 inches, or enough that with both out as far as possible the boat is sailing level. Because the area of board counteracting the windforce is reduced, less leverage is required and the boat will come more upright. True, there will be less centreboard in the water, but no less depth than when it was heeled, and much is gained by having it all effective.

The hull will also present less windage by being level, and because the boat is sailing on an even keel — as it was designed to do, it is going faster. Also, as the boat comes upright, more sail area is exposed to the wind, which gives more speed, which gives more lift to windward and so on. As the strong winds abate, and before the crew can relax, lower the board to prevent the extra leeway caused by the easing of the wind.

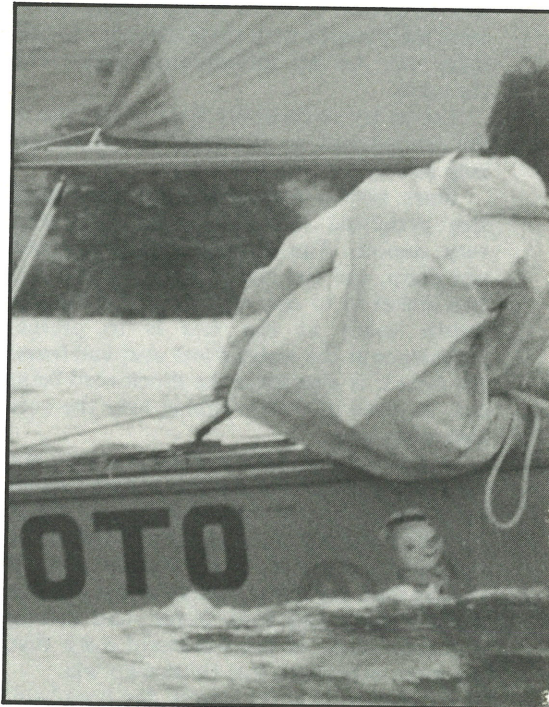
Although all the boats are similar, being one design, the differences between them are too small to make any significant difference in boat speed. It is only the helmsman making full use of his sails, centreboard, and rudder, and causing as little windage and drag as possible, that puts him and keeps him at the front.

## On with the motley

by Peter Thomas

In any conversation, discussion, or article for *Mirrormania*, it is hard to think of a more controversial or delicate subject to approach, except perhaps sex. I refer of course to crews and crewing. Helms have no inhibitions on this score. Crews, it must be said, are equally vocal about helms, there's probably more harmony at the Vietnam Peace Talks, although about the same amount of discussion about the seating arrangements.

Helms love to tell of the crew who bought a nationally advertised and guaranteed power chain saw, only to return it a week later complaining bitterly that it was no faster to use than the axe that it had replaced. Puzzled, the sales man started the thing up to check it, whereupon the crew remarked in alarm, "What's that noise!" Crews, however, claim that most helms couldn't pour water from a boot if the instructions were written on the heel. No sacrifice is too great for a good crew,





which is why you won't be seeing any sacrifices made in this area.

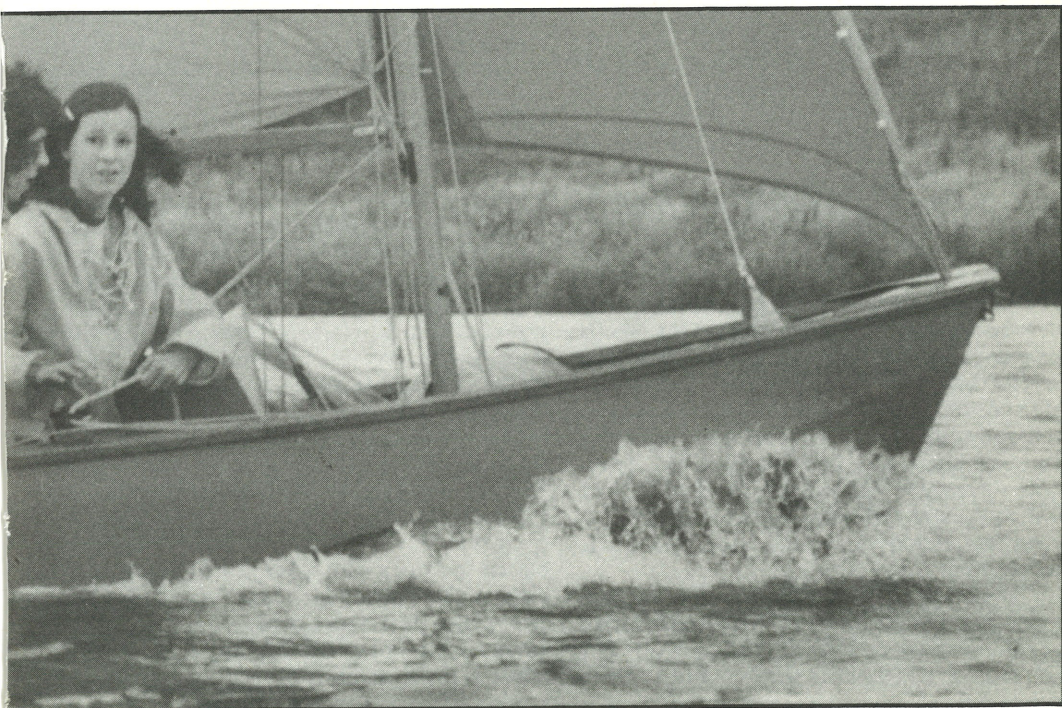
But what makes a good crew? If decibel output is any criterion I have collected a winner. Gaining attention over 80-odd other crews on the line at Chew Valley strongly reminded me of Wellington's great remark on his troops before Blenheim. "I don't know their effect on the enemy, but they scare the hell out of me!"

A point often overlooked is that crews need not be male, but beware, there are seaworthy, and unseaworthy females. The former are usually all snapped up, and the latter stand in groups muttering "I just don't know how she can wear a wet suit with her figure!" about the former. Watch out also for the Women's Lib. type; if insulted they tend to burn their bras at the drop of a hat, and this could melt a nasty hole in the jib when you least expect it. Why is it that you always get on better in the boat with someone else's wife than she does crewing for her husband? and vice versa? Sadly I have been forbidden to pursue this interesting social phenomenon to it's logical conclusion, but there is scope for

some serious research in this area.

You may say, as I did, give the crews more to occupy them, and they'll have less time to think up sarcastic remarks about your tactics, and like me, you'd be wrong. They get all possessive: given sole charge of the spinnaker, they growl, and even scream at you, if you so much as re-arrange the lee sheet to get rid of the knotted end you've sat on. Still, it does provide another aspect of their performance that you can criticise, and it keeps them off the streets. Of course, there are spinnaker crews, and nonspinnaker crews, the distinction lying in whether or not they own a wet-suit.

Crews should be alert, but selectively informative. There is no joy in having your attention drawn to the plight of a capsized Whizzbang up to his burgee in the mud, when a totally un-noticed Merlin Rocket on starboard is about to halve your overall length. A certain amount of bravado is desirable, but more important in my view, is the ability to chicken out. No crew observing the 'oggin without, pouring within, will be censured for leaping onto the toe-straps without waiting for an engraved invitation. In fact, a





crew who knows where it's at can be a decided advantage in those tricky situations when the fleet rival seems to have you beaten on all points of sailing, you are racking your brains for a solution, while still trying to appear composed, and a bored voice from the front says, "Why don't we luff him onto that dirty great shallow over there?" Then again some helms prefer the subservient ignoramus type, who jumps immediately you shout jump, and stays up until told to come down, and never does figure out what it's all about, but enjoys it all in his, or her own way.

Whatever the type, your crew should be affluent enough to buy his round, and perhaps even add the odd item to the boat. Following a series of what I thought were rather interesting manoeuvres, my crew pressed a self bailer on me and implored me to fit it, muttering the while about life insurance and his dependants, and stuff like that. Since complying with this request we have spent all our time sailing 'Wisconsin' on her ear, in order to ship water and find out if the thing really works. We finally achieved an unpremeditated downwind capsize, or at least a semi-capsized, as, per usual, Robert (Dry Knickers) Morgan did not feel constrained to leap over the side and spoil his record, so we finished up with water lapping happily over the side tanks, and we are now in complete agreement as to the efficiency of Mr. Elvstrom's product. I do hope there's no truth in the rumour that Morgan has been seen downtown pricing trapezes . . .

All in all, crews really are a problem. You can't race without them and in some cases you can't race with them. They have distressing tendencies to treat you like a teaching hospital, and leave to buy their own craft, they get pregnant just when nicely trained, or fall-out over insults, not even remotely connected with sailing, regarding their omelette mix and cracks in the drive. Some even get married and are not allowed out any more, others so handy in light airs, grow up and discover the other sex holds more interest.

To sum up, as the politicians say, picking a crew is akin to learning to drive, or choosing a wife. Anything will do to learn on, but when you know what you're doing, get a good one!

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## Spinnakers

by Ted Wilson

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In 1967, during the National Championship at Plymouth, I was lying about 12th when we rounded the last mark and started a beam reach to the finishing line, quite pleased to see John Taylor behind me. However, he put his spinnaker up and sailed free to the leeward end of the line while I tried to protect my clear wind by sailing a windward course to the line. John finished 2nd to Chuck Shepherd and I finished 10th. I tell you this for two reasons. Firstly, it illustrates the advantage to be gained from a well used spinnaker and secondly, because it is indicative of the progress made with Mirror spinnakers in the last few years. John, or anyone else for that matter, could not try that move with the same success these days.

For those of you who have not got a spinnaker, or for those who have one but aren't really very sure how to rig it properly, I shall endeavour to describe and explain the sail and the bits of equipment needed to make it work well.

The shape of the Mirror spinnaker as shown in the Yearbook is really not very good. It is a full cut sail which sets with a large useless bulge in its upper third. To get a flatter sail one has, because of the straight leeches, to lose area and the most successful shape is a compromise between shape and area. When considering the right shape for a spinnaker two points must be remembered. The spinnaker, like all other sails, derives its power from the wind flowing across its surface, the bag full of wind idea is quite wrong. The other point is that a spinnaker gives the greatest advantage on a reach and is less significant on a dead run. Although there has been a great deal of experimentation with the shape and arrangement of the panels, I am sure that in the case of a Mirror spinnaker this is not as important as getting a good specimen of whatever design you have chosen. In particular look out for tight seams and luff tapes which spoil the even curve of the sail when it is set. It is obvious when a main or jib is blown out but this is not so with spinnakers. The useful life of a



frequently used spinnaker is less than that of a mainsail.

It is quite beyond the scope of this article to describe in detail the possible or even probable spinnaker equipment for a Mirror but I will try and summarise the important points. The rules of measurement give the owner a free choice of spinnaker fittings, but my own rule is to select the simplest, and therefore usually the cheapest, piece of equipment that will adequately do the job. This keeps things easy to operate and prevents the boat being cluttered up with unnecessary bits and pieces.

The sail must not be able to fall off the hook on the end of the pole in very light weather. To prevent this either use the sprung piston type of hook or alternatively bind the nylon rings on the sail with twine until the standard pole ends clip onto them. The pole must have a convenient downhaul fitting. A pair of open cleats (HA81) or spinnaker pole downhaul cleats (HA157) screwed to the middle of the pole locating between two knots about 2in. (51mm) apart in the downhaul seems to be successful.

The Anglo-Saxon dog-clip arrangement which is, I believe, supplied through the Daily Mirror is most unsatisfactory and should be discarded.

The downhaul should be arranged in such a way that the angle of the pole can be adjusted while the sail is set and drawing. On my own boat the downhaul terminates about a foot above the deck in a stainless steel cringle. The adjusting cord is fastened at the foot of the mast, passes through the cringle on the end of the downhaul and then goes down to a small fairlead and cleat screwed to the deck by the mast.

The halyard should be made of braided cord as laid rope twists more. Any twists which do occur in the halyard and top part of the sail do not give trouble if a swivel is fitted at the point of attachment of the halyard to the sail. Make sure the halyard is free running and does not foul on things like the gaff jaws. It is best secured by an easily released cam or clam cleat. Both the halyard and the downhaul can be led aft and cleated under the thwart where the helmsman can operate them.

The spinnaker fairleads should be positioned quite well aft to open the slot

between the spinnaker and the mainsail as much as possible when reaching, but fairleads too far aft make it difficult for the crew to reach the sheets and there is an increased likelihood of the sheet getting itself over the end of the main boom when the spinnaker is being hoisted or lowered on a reach. Systems using a second fairlead leading the sheet forward to about level with the thwart are quite popular but the advantage of being able to get the fairlead 2ft. further aft is marginal compared with the disadvantage of the increased friction making it difficult to adjust the sail set in light conditions. The cleats should be positioned so that the sheets can be easily cleated and released by both the helmsman and crew from either side of the boat. Clam cleats are not suitable for this purpose as the sheet can easily jamb itself when you want it to run out.

The latest item of equipment to find application on Mirrors is the spinnaker chute which is superceding the roller and net on the foredeck idea. My chute seems to work efficiently in all conditions and the ease and speed of handling justifies the effort of making it. I must say that the rules of measurement do not allow you to cut holes in any part of the boat to facilitate a chute so it has to be deck mounted.

I hope I have given those of you without spinnakers some idea of what to aim at when you get one and perhaps the rest of you are taking a more critical look at your own system.

Spinnaker technique is something which is, perhaps more than any other aspect of sailing, personal and certainly nobody can be dogmatic about how it should or should not be done. I am sure the best advice is to read about it and watch other people to get the basic ideas, then develop your own system and practice it until you can use a spinnaker with as little effort and fuss as it takes to tack. There is more to handling a spinnaker than can adequately be described in this article but I shall endeavour to discuss the fundamentals.

It seems sensible to consider first when a spinnaker can be used. Obviously the spinnaker should be used on the run and don't be put off by the strength of the wind as a spinnaker helps to stabilize the boat on a



dead run in strong winds. A broad reach is fairly obvious too, so get it up every time. The awkward question to answer is how close to the wind can you successfully fly a spinnaker and the answer depends on several factors: in particular the cut of the sail and the strength of the wind, but in general if the foot of the sail is tight and you have to pull the main in to a close hauled position to stop it from lifting, the spinnaker is doing you no good even if it looks full.

How you hoist the spinnaker will depend largely on the competence of your crew and I must say I leave this operation almost

entirely to mine. Our system is this: the crew pulls the spinnaker up as we round the mark while I'm still trimming the main and pointing the boat in the direction of the next mark. Generally speaking if the helmsman hoists the spinnaker he cannot do so until he has established his new course and therefore wastes vital seconds. Next I hand the crew the pole and start trimming the sheets roughly while she puts the pole in and sits down and takes the sheets from me. The important points are to have the spinnaker well prepared and clipped on to the halyard before you get to the mark so that it can be pulled straight up without jamming or twist-





ing; to have the halyard marked so that the crew knows just where to cleat it; for the helm (or the crew if the helm is doing the hoisting) to pull the sail round the forestay as it is being hoisted; and for the crew to attach the downhaul as the pole is pushed forward prior to it being hooked onto the mast. Many crews attach the downhaul after the pole is hooked into the mast fitting which moves their weight unnecessarily far forward and certainly wastes time.

Now the spinnaker is up you must concentrate on getting the best possible advantage from it by making the boat go fast and by gaining the most tactical advantages



from your extra speed.

Let us consider first the spinnaker used on a dead run. In all but the very lightest of winds the head of the spinnaker should be about 18in. (459mm) down from the top of the mast and the pole sloping slightly up from mast to sail. The pole can be pulled well round, about in line with the main boom and the sheet played, easing it until the luff of the sail starts to break and then tighten a little. Don't be tempted to pull the pole too far round as the sheet will then have to be over tightened to prevent the spinnaker from collapsing. Don't relax downwind, it is just as much a part of the race as the beat and requires the same level of concentration.

Broad reaching is much the same as running except that the guy and pole angle requires less fine adjustment. In marginal planing conditions tighten the sheet in as the boat picks up speed in a puff to encourage it to plane. In a really strong wind keep the boat level and don't be tempted to allow the boat to luff up in the puffs, always bear away a bit and keep the boat planing. Beam and close reaching with a spinnaker can win and lose races. I prefer to let the guy go slack and allow the pole to rest on the forestay and then play the spinnaker in much the same way as a genoa. Try to carry the spinnaker as far away as possible from the mainsail to avoid backwinding it. This is aided by slackening off the head from the mast top and freeing the sheets until the luff is almost breaking. It is tempting to tighten the guy and pull the pole round a bit in an effort to 'catch more wind.' This means the sheet will also have to be tightened to prevent the sail from collapsing which not only lessens the effectiveness of the spinnaker but also spoils the flow of air behind the mainsail. In lighter weather the pole can be pulled down a little and the head raised to help prevent the luff from breaking.

The closer the reach the more important it becomes for the crew to rivet his attention to the luff of the spinnaker and to play the sheet with precise control. If the sail is a little too tight power will be lost then and if it is a little too slack then the luff will break and the resultant flapping will draw unwanted attention to your mistake. Remember that the stronger the wind the





less close one can carry the spinnaker because as the boat goes faster the apparent wind direction moves further forward.

Gybing with a spinnaker is quite a straightforward matter. The important thing is to keep control of the spinnaker sheets while you are gybing. We do it like this; as we approach the gybe mark I cleat both the spinnaker sheets and prepare the mainsail and tiller for gybing. As we gybe round the mark I uncleat the sheet which was to windward and pull it as I go across the boat which pulls the pole round and tends to flatten the sail round the forestay. As soon as the crew has pulled the boom across I start to trim the spinnaker sheets for the new leg while the crew stands up, detaches the end of the pole from the mast and clips this end onto the new guy, then pushing the pole out into its new position, rejambs the downhaul and frees the other end of the pole from the spinnaker and clips it onto the mast fitting. At no time during the manoeuvre can the spinnaker fly free.

Taking the spinnaker down would seem to be the easy bit but there are three main pitfalls. Firstly when the crew stands up to take the pole out he can let go of the sheets and then when the pole is unclipped the sail

can fly free and can be difficult to get hold of again, particularly in a strong wind while on a reach. The sheets should be cleated or held by the helmsman while the crew removes the pole, but remember to free them as the crew gathers in the spinnaker. Secondly when the crew or helm releases the halyard it runs out faster than the crew can gather in the sail which then falls into the water and disappears under the boat. To avoid this the crew should always gather in the foot to collapse the sail before releasing the halyard. It is then easy to pull down without it being blown from the crew's grasp. Thirdly the helmsman loses control because the crew has done him 'a nasty' with the pole as he thrusts it back into the boat.

Unless you are trying to maintain, establish or prevent an overlap at a mark, don't leave it too late to get the spinnaker down and stowed before you round the mark as much more can be lost by trying to start the beat with a spinnaker half down and a flapping jib than can possibly be gained by leaving the spinnaker up for an extra few seconds.

The one thing that can be said about spinnakers without any fear of contradiction is that there is no short cut to success — it takes a lot of practice.



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# Thoughts on getting a crew

by Stan Wilson

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I have always thought that one of the main advantages of the Mirror, the other advantages are legion, is that so often it can be sailed solo. On the other hand it is so often laid down that the 'old tub' must have a crew of two, and this is where this annual headache raises its ugly head.

One helm thought that he had overcome this difficulty by acquiring one of those female tailors' dummies with a face and figure which all men dream about, but despite frantic searching, never seem to find. No bother at all getting it down the beach in pieces, assembling in the cockpit, dressing it in an old one piece suit, and pushing off while everybody else was still tinkering about with their latest bit of 'go fast' gear.

The first weekend nobody noticed except the O.O.D. who peering through the binoculars remarked that Bob S—— had a 'smashing bit of crumpet' with him. It was the second weekend when disaster struck. A slight lapse in concentration was followed by the inevitable capsize, and before Bob could grab her and inflate the life jacket, 'Popsy,' that was what he called her, sank quicker than the anchor. The officials on the Bridge in the Clubhouse watched with horror as they saw the beautiful red nylon 'hair' disappear beneath the waves, and frantic S.O.S. calls went out to every 'Rescue Service' for miles around. It was two Safety Boats, one R.N.L.I. Lifeboat, one Air-Sea Rescue Helicopter, and three police frogmen later, that our friend realised the error of his ways.

The fine for causing a 'public mischief' was only £50, but the bill for the public services involved totalled £350.01, and even now I am not sure whether or not that included V.A.T.

Of course there has always been a problem of crews for sailing craft ever since Adam, astride a log, held up Eve's figleaf to gain extra propulsion. History records that if it had not been for the 'pressed' men who had been 'Shanghaied' only half of Nelson's fleet

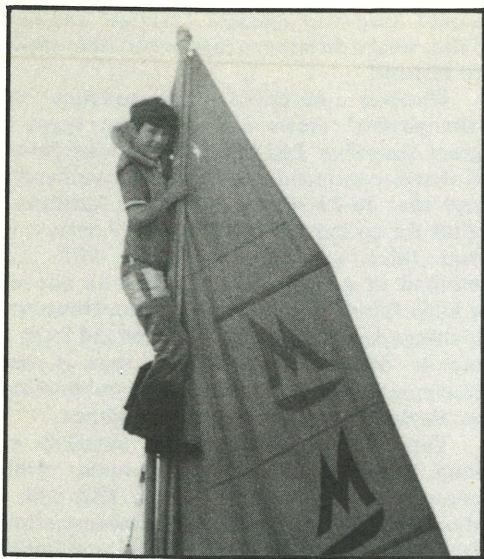
would have ever reached Trafalgar and just think what a difference that would have made to history!

Whoever outlawed the practice of 'shanghaiing' crews did us Mirror types a great disservice. Just think of the possibilities if it still continued. No worries at weekends, and that 36-22-36 you have been hankering after for so long at last a reality. Anyway, if you think you can get away with this method of getting a crew, please do not let a little thing like the law stop you. However, if things don't work out, I understand from a lawyer friend that the plea that it was recommended in such a reputable publication as '*Reflections*' is positively no defence.

Those of us who consider ourselves as long term planners can, of course, think about breeding our own crews. This will, I should imagine, need a fair bit of co-operation from the wife/mistress/girl friend/or scientist friend who knows about test tubes, (delete whichever is inapplicable, preferably the friend with the test tube). Should the co-operation you seek not be there, there are certain underhand means to an end, such as taking a few aspirins from the medicine cabinet, and swapping them with those in the handbag, but this is not recommended as it will only work once, and if you are taking the trouble to plan so far ahead it is wise to think about a succession of crews. Most offspring suffer from a complaint when they are about 14/15 years of age, when they get that peculiar delusion that the 'old man' is past it. I suppose you have to be firm and punish them, so I would suggest you ban them from the luxury and stability of the Mirror Class, and relegate them to the Mirror 14 where there is always some 'clown' at the helm who never fails to 'dunk' them whenever they get on the trapeze. This would cure any normal person but the salt water somehow softens the brain, and in their demented way, they even get to like it.

Should you wish to bypass the natural way of things, and heaven help us if we have such members amongst us, there are always the Adoption Societies to appeal to. I can warn members, however, that the 'fuddy-duddies' that run such organisations do not consider bringing up a child to be a good healthy Mirror crew, as being a good reason for adoption. What you would have to do





too is keep a straight face and lie about a Christian upbringing, love and affection, and a host of other things you know little about, before you stand any chance at all.

Another method of getting a crew that I thought of, was blackmail. If you are forever on your toes instead of burying yourself in the cockpit of the boat something will always present itself.

I thought this was a good way of getting somebody until I discussed it with a friend at the Club House bar. He told me that he had actually tried this, and he felt that it was definitely no accident that the jib was still cleated when he gybed at the sea mark. It just did not ring true that the crew panicked when the boat capsized. He had never been afraid of water before. As a matter of fact, my friend found out later, that this particular crew had swum the Channel twice, but he continued to hold on tight to the gunwale until the boat turned turtle. My friend swears that the new elastic holding the dagger board was secure when they were on the beach, but the dagger board slowly disappeared from sight as they floundered in the water. The panic of the crew as he clambered on top of the upturned boat did not look real as he first put a knee through one panel of the chine and then a foot through the other. If you are thinking of blackmail, forget it!

The next thing that occurred to me was

coercion. Some may think that 'Shanghai' and 'Coercion' are the same but the technical difference is that with 'Shanghaiing' the victim, sorry I mean crew, is either unconscious or semi-conscious, and consciousness is restored with a hand bailer of salt water, whereas with coercion the crew is well aware of the 'Half Nelson' or 'Head Lock' to which he is being subjected.

One has to be very careful when adopting this method for if the boat 'bucks' on a wave when launching, there is a possibility that something may be broken. It may prove difficult for anybody to crew with a broken arm or a dislocated neck.

My wife swears that those bitten by the Mirror bug are quite mad enough to sail with a broken neck, but then she always exaggerates when talking of her arch-rival, M21060. A dislocated neck perhaps, but a broken neck — ridiculous!

I was quite convinced at one time, that charm was the real answer to this problem of finding crews. I thought that if you were particularly nice to someone, however difficult that might have been, then they would be only too happy to crew for you. Another friend told me of his experience and raised considerable doubt in my mind.

It appears that it cost £50 in Solicitors' fees, a night in the police cells, and an hour in front of the 'beak' to try and convince the 'old goat' that he was only smiling and being nice to the boys for the sole purpose of getting a crew for his Mirror. You have been warned.

Bribery was yet another method that was tried and it was this particular method which dented my pride a little. Firstly, the crew insisted that he be paid in advance in case he 'never came back.' I realise I shall never be in championship class, but I feel certain that I am not so bad as to lose a crew member. To add insult to injury I next saw him taking to the water in another boat, so beside having no sail I also lost £5.

Running out of ideas, my wife suggested I might find one of my own kind in the Mental Hospital. She felt, and I quote, 'the shock of putting to sea on half a dozen lumps of ply, held together with telephone wire and glue, would probably effect the cure the doctors are looking for.' Very little understanding these women!



# RACE WINNING TECHNIQUES

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## More miles to the galleon

by Peter Barnes

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Most articles on making the Mirror go faster through the water deal with bottom finish or having the best suit of sails you can buy . . . very seldom is much written about the other retarding force, 'windage.' By this, I mean any obstruction which either deflects or impedes a free and even passage of air over the hull and sails, reducing their effectiveness and efficiency.

To use a simile, a clogged air-filter of an engine increases fuel consumption and decreases power output. With a dinghy, excess windage wastes the force of the wind and speed is consequently reduced. The cure is the same in both cases — you either replace with something more efficient, or clean up.

What I shall do then, is to go over the boat, and look at the various areas where possible improvements can be made.

The main and jib sheets, where possible (by this I mean when accurate weather forecasts are available) should be kept to the minimum size for comfort, even to the extent of making tapered ones. The Holt-Allen black blocks for the mainsheet are quite adequate, having the bonus of low windage area. Going further, the dead-eyes for these blocks can be the small sheet stainless variety, instead of those large black things people still retain, and which were originally intended for running the mainsheet through. To improve the jib sheet, why not permanently attach it to the jib with a small, neat whipping, instead of large, unsightly knots?

The kicking strap can be improved by having the block on the boom faired as low down as possible, leaving only a single cord for the wind to pass over. I would be against using wire here on the grounds of safety — having many times caught my fingers between it and a raised centre-board.

Sometime ago I experimented by using stainless wire for the halyards in an attempt to reduce stretch and windage. I found that it is not recommended for the mainsail, the reason being that, where the eye passed through the mast over the sheave it is restricted, often jamming, and to free it means rapid jerking — metal fatigue quickly set in and the whole lot collapsed about my ears. With the jib, however, it was a more feasible proposition. The make up of the halyard was a nine foot length of 7 x 7,2mm stainless wire, eyed at both ends, one end shackled to the jib peak and the other having an 11 foot length of 5mm cordage spliced on for simpler stowage and cleating.

To keep the halyards at the front of the mast, both pass through the spinnaker pole anchor point on the mast, and are only allowed to go round the sides on the lower portion of the mast.

Shrouds are another area where effective reductions can be made. The standard galvanised wire used is 1/8in. (3mm) diameter. This can safely be reduced to 3/32in. (2.5mm) stainless wire, which has a breaking strain of over 500 kilograms. As the foreward mast step is little used, the forestay can be extended some 4-5 inches, reducing the amount of rope used for tying down, and at the top end of the forestay it can be continued round the mast, and have a combined jibstop. The pulley there can be reduced in size effectively.

On the shrouds, it is common practice to use a form of protection for the jib sheets,



allowing them to pass more freely over the shrouds. What is most commonly used is a plastic tubing which, by the way, has hidden dangers. If your shrouds are galvanised, make sure the tubing is loose, and there is no possibility of water collecting in them by having the tubing a snug fit on the ferrule. Corrosion can eat through the wire very quickly without being noticed. The most effective material I have found is that used in the electrical industry and known as spiral cable-wrap. It has an outside diameter of 1/4in., rotates easily, and does not collect water. It is sold to the trade by R.S. Components and should be obtainable from a radio/T.V. repair shop. As the sheet only touches a small section of the shroud, a length of 15in. should be more than sufficient.

Turning one's attention to the spars — the gaff is invariably the main offender. When tapering the gaff, bear in mind that it has to pass through the air smoothly, creating minimum turbulence. Therefore, very little, and preferably none, tapering fore and aft. Only the sides should be tapered. This will give more than sufficient flexibility. The gaff jaws should have the outer edges faired to the inside face, but not faired back too far as this tends to weaken them too much and breakages occur. Finally on the gaff, if you use those proprietary burgee holders, keep them on the front, or better still, just use the luff groove and put the racing flag down there.

The mast should be kept free from unnecessary fittings.

On the boom, the kicking strap block can be chamfered forwards, and radiused, and as with the mast, kept free from unnecessary fittings. This is another reason why I am against the growing practice of carrying the spinnaker pole there, with all its attendant fittings. Outhauls and downhauls should be kept simple and neat, using the smallest diameter cordage you can get away with.

With the hull, projecting fittings should be kept to the minimum. The jib fairleads can be made to fit on the inside, not the top. Apart from the extra windage, placed where they normally are (not on the original), they can be quite uncomfortable to sit on when the wind blows. Other fittings on the gunwale can be improved; if you have rowlock plates,



change them for plastic (lighter) type and recess them into the wood. Spinnaker pulleys can be fitted to the inside. Most chutes are flush fittings so little need be said, but spinnaker control lines should be minimum size commensurate with comfort and wind conditions.

The trim of the hull in the water can affect the amount exposed to the wind. By sitting too far aft, the bow is lifted. This wastes the power from the sails. Apart from being pushed back, this is forced sideways which necessitates a continual correction of the rudder — more drag. The best trim is with the lowest point of the foretransom just touching the water when on the wind. More windage is exposed by allowing the dinghy to heel too far. Try and keep it level, the sails are far more effective at this angle.

Up to now all I have said deals with the dinghy itself. There is, of course, one more item of prime importance — the helmsman





# Improve your figure

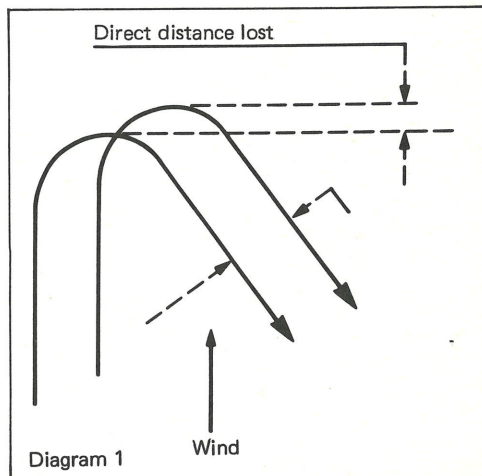
by Peter Barnes

Racing in inland waters, where there is no tide or current, one sees the same mistakes repeated with great frequency.

People pay insufficient regard to wind-shifts, rounding marks correctly and the 60° vector.

In small lake circuit races, with heaven knows how many laps, you can lose up to 4 boats' length per lap by rounding marks badly.

The rule to remember at the leeward mark is to go in wide and come out fine — as in Diagram 1.



and crew, the largest excess windage factor in the dinghy. One should formulate a set of Rules, starting with, say, wherever possible the helm should stay in the bottom of the boat and let the crew do all the balancing. This will also serve another important point — with the crew staying on the windward side, they will stay out of the slot between main and jib where free passage of the wind is essential. When the wind pipes up, try and stay close behind your crew. This way, only one body surface is presented directly to the wind (and you stay drier). Finally do not wear loose flapping clothes.

To sum up, it may be possible to calculate that some of the things I have mentioned would only mean a difference of inches in a mile, whereas others may mean yards. To those of you who have sailed at a Championship and seen how close boats have been after a race of nine miles, isn't it worth it?

Assume you are running to a mark with a beat following and there are boats close behind you. Your instinctive reaction is to harden up to weather to prevent any risk of overlap. If you are near the mark, ease off to leeward, gybe if you have to, and 'hit' that mark on a beam reach, not frantically pulling in sheets, and come out from the mark with the sails set for the beat moving at full speed. Any boats behind you will drop off in your dirty wind, or have to tack to clear their air without having full way on.

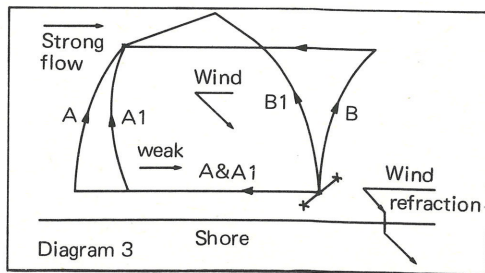
Shooting a mark is a way of rounding which, although slower than a proper rounding, can convert a bad situation into a



this way you can watch the way you're going, AND see the wind direction at the height it really matters. Be ready for changes in wind direction and strength when nearing islands, trees or other obstructions.

Sea or river sailing brings into play one of the most important factors of final boat speed — this of course is the current. Bad use of it can lose you, not just a few boats' lengths, but hundreds of yards.

The 60° vector is a well bandied phrase, little understood and seldom correctly used. Basically, it indicates an area to sail in when on a windward leg, to keep the advantage and nullify the disadvantages of windshifts.

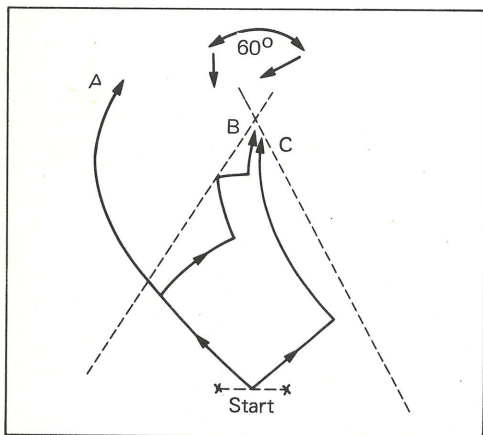


An extremely simple example may help. In Diagram 3 above, helmsman A has stood along shore in a weaker current, overstanding the mark, allowing for eventual drift and then heading out to the mark with fingers crossed. Helmsman B heads out first, not considering or failing to understand, water-flow over deep and shallow water. It may even be that he wants to approach the mark on starboard. What will happen is that he may make half as much ground as helmsman A on this tack, or at worst he could stay in one place for the rest of the race.

If, however, the tidal flow is reversed, it would be quite correct to stand out to sea. B would go to windward in almost a direct path, whereas A, tacking along the coast, would find he had to reach down to the mark once he did tack out to sea.

Still considering this simple case where the tide is about to turn and there is but little flow in either direction, the determining factor is the wind. This brings into play a phenomenon known as 'wind refraction.' When a mass of air passes over the coastline either on or off-shore there is a tendency for the direction of the wind to veer almost  $90^{\circ}$  as it passes over. Thus, by making your first tack along the shore, you get a lift towards the first mark.

Finally you should consider the possibility of a direct on or off-shore wind. Off-shore winds usually attain their full strength at a



Winds can vary up to  $90^{\circ}$  on lakes, and sometimes even in excess of this. You can see from Diagram 2 that helmsman A, whilst continually getting a lift, is on a merry-go-round, and not getting any nearer to the mark. Helmsman B is tacking more often but continually making ground. No comments on C, he's just a jammy .....!

Something which really only comes with time, is being able to feel the boat for wind changes, otherwise known as sailing by the seat of your pants. Even this can be given a helping hand. The main thing is to ignore your burgee when beating or reaching for although it is compulsory to carry one, it is also a b . . . . . liar. Sail on the luff of your jib, and on woolstrands on the shrouds, as



distance of at least nine times the height of the land or obstruction over which they have passed. Thus a tack out will pay off whereas an on-shore or sea breeze can be stronger closer to the shore.

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## Thank you, dear Father Christmas

by Michael McNamara

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## Roll tacking

by Roy Partridge

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**ROLLTACKING** — A wonderful self-explaining word — you roll the boat while tacking, after plenty of practice.

While beating in light airs you can temporarily increase the effectiveness of the wind when the boat leans to leeward, by slowly bringing the boat upright, and if you hold the same course whilst watching your burgee you will notice that the apparent wind moves back towards the beam until you stop righting the boat, when, because of the extra speed as well, you appear to be nearly heading the apparent wind. Now it follows that if, whilst bringing the heeling to leeward boat upright you turn into the wind, you will gently power your way round the beginning of the tack. Still staying where you are, allow the weight of the boom to pull the sail over towards you, letting the mainsheet slip a few inches. You should almost be sitting in the water with the boat heeled well over and approximately 90° from your previous sailing line. At this point don't fall in, but gently shift your weight to the new windward side and regain the few inches of mainsheet you had previously let out. Combined with the fanning of the sails while rolltacking, this latter movement may well treble the effective strength of the breeze. Watch your burgee carefully as you bring the boat upright, because when you stop you will probably be trying to point too high.

To a lesser extent you can use most of this rolltacking in winds almost up to gale force, but of course, then the gain is less apparent.

After some practice you may think that the gain is not worth the effort — that is the time to watch someone who carries out a perfect roll tack alongside one who doesn't — the gain the former achieves will have you immediately practising with renewed gusto.

Last Christmas, were you one of the lucky ones? Did you find, hidden deep in your Christmas stocking (amid all those socks, pipes and underpants, slippers I reserve for cruising sailors) a book on how to win races?

Leaping on it with a cry of joy, you, perhaps, thought that this could be the catalyst you were waiting for. The secrets of making the brilliant port tack start; of playing the windshift; and of that Force 5 gybe would all be revealed. Mind you, if you think that those secrets are for your eyes alone, you are in for a shock. For a start, the writer already knows them and he hopes his book is going to be read by more than one person. Taken to extremes, the thought of 30,000 Mirror Dinghies arriving at that one ideal spot on the starting line (which the book so clearly describes) could make many a strong man quake.

The book will be very convincing. Apparently, achieving this winning thing can be neatly split into categories. These include tuning the boat; race preparation (where we are warned that the trailer wheels must be greased); the start; the beat; the reach and GYBE; and the run (when we will have time for a Mars, but we mustn't relax); so to the finish (where we must cover the guy who is lying second) and finally to the apres sail (where the check list we are given must have been lifted straight out of a Jumbo Jet.)

Of all these, most attention is given to the start. Did you know that there are at least three ways (apart from guessing) of finding out which end of the line is favoured. You can, for instance, luff up head to wind on the line. This is shown as a diagram with wiggly lines to show that the sails are flapping. Then you should see which end of the line your bows are nearest to. The second method is to sail along the line with the mainsail trimmed properly, and the sheet held tightly. Then, after tacking without letting go of the string, you should be able



to see whether the mainsail is lifting (so you are sailing towards the favoured end); or needs easing (so you are sailing away from the favoured end); should be, that is if you can avoid the dirty looks from the crew who will be bailing out the water that poured in when you heeled because you refused (selfishly in his/her opinion) to pay out the sheet. The final method involves a compass and should be reserved for degree aspirants. It involves jotting down the wind direction over a time. This will not only enable you to sort out the favoured end at the start, but also the likely changes so that the beat can be planned.

Now, all this is very simple on paper, especially when you are helped by nice clear diagrams which have useful arrows for the wind and lines to show the boat's directions.

In reality, things are different. Gone are those arrows, and you have to rely on which ear has the most noise pouring in (it's a sort of swishing sound). Gone too, are those lines to show the direction of the boat. They seem to have been replaced by bubbles, which, in any case, don't last long. Let's say then, that you decide to try the three ways.

First you luff up and the sails flap, but you will find that you cannot see either end of the line because there are too many boats, all head to wind with their sails flapping . . . An interesting point here – if you are going backwards, which way is starboard?

So, on to method number two, which is even more difficult because there are all those other, selfish, boats whizzing up and down preventing you from holding a straight course.

Finally, then, you try method three. Remember you have to jot down the wind direction. So let's say it's 180° and after a bit changes to 175° (M'mmm, you say) and so on. After a few minutes your crew will say, "Excuse me Skip", but you answer, "Shush, I'm concentrating." "But, but . . ." Eventually you will say, "Right crew, I've cracked this, let's go" – to which the answer will be, "Thank goodness for that, the others started two minutes ago."

However, a little practice will help and about half way through the season you will be able to say (well before the start), "right crew, that's where I want to start."

Unfortunately (that word again), you cannot reserve your spot like you can a railway seat, by planting your bobble hat on it. Others may try to get to it too.

Again the books try to help, for they usually show about six boats approaching the start line, of which about (!) three are white (Hurrah for the Goodies) and three are shaded (Boo, hiss for the Baddies). Various wiggles show the tactics involved as the leeward white boat (lee-bowing a black one) crashes off into the distance; the centre white one points as high as possible and the windward white one tacks on to port. The last black boat has a sub-title under him which says, "Boat F has made a poor start and must start the race in dirty wind." I expect he realises this without being told!

This preoccupation with black and white is OK, if only five or six boats start, but what about the various shades of grey? The other 50, 100 or 200 boats in, say a Championship race? Perhaps the moral here is never to have a dark coloured boat as it gives the helms of the white boats a psychological boost. This is even more important on the beat where, in the books, the white boats pick up the windshifts and tack properly on the headers while the poor old black boats go back and forward in the same place, making no headway. The degree books show complications like sailing into a bay where the curving of the wind is shown by thick, lovely lines which, again, are never there in real life. Then, wherever you go you are





headed and the others lifted (now what colour is your boat?) Where, too, is the church tower (conspicuous) with which you are supposed to take bearings?

In fact, I've never once read in a book the most common reason for tacking on a windy day, "Golly, crew, my legs are tired. Let's have a walk to the other side." Another place where the books try to help is rounding the marks. Again the white boat (cocky little devil) is always on the inside while the poor black boat is always on the outside. Mind you, if the black boat is so bad, how on earth can he stay up with the white boat long enough to be called 'water' at? Also, the books don't seem to have any answer for the rounding of marks in big fleets where the requirement is not just 'water' but 'water for 40 boats, please.' I wonder which colour the outside boat is?

What then IS the answer to this winning problem? Obviously there is no short cut, and an apprenticeship has to be served. You must read the books, but you must also practice. By doing this, lines of thought stimulated by the experts can be incorporated into your sailing. Don't forget though, that 'an ounce of practice is worth a ton of theory.' Now where did I read that?

In the meantime, what would happen if 30,000 Mirror Dinghies arrived on your bobble hat on the starting line?

P.S. Dear Father Christmas,

Can I have a couple of pints of white paint next year, please?

# Waves

by Peter Barnes

The Plymouth National Championship in 1967 was my first introduction to sailing at sea, and one which gave me a great respect for water 'en masse.'

One particular situation arose during a race which alarmed me at the time and subsequently puzzled me for many years as to the cause.

If my memory serves me correctly, it was the third points race on one of the broad reaching legs and the wind was about force 3-4. Spinnaker was set and some exhilarating surfing enjoyed. It was on one of these frothy rides down a wave that I sat open mouthed as the bow started to submarine into the wave in front, only blind panic made me scramble to the transom which brought the boat level considerably lower in the water, having collected at least five inches in the bottom. Why did it happen? It is with this question in mind that I would like to try and give a better understanding of waves, their effect, and how to use them.

It is not until a wind reaches a speed of just over two knots that it is possible for waves to be formed. Once this happens and these minimum wavelets occur, they are always the same size, having a wave length of just over three inches, and a ground speed of fourteen inches per second.

When the wind speed increases, more waves are formed which either combine or interfere with those already set up, eventually forming a larger wave form, the speed of which can be approximated by multiplying the wind speed by 0.75. The eventual size of these waves is dependent upon three variables, these are: the wind speed; the duration of this wind speed and the fetch — that is the uninterrupted distance the wind travels over the water.

A rough but reasonably accurate method of calculating the maximum height of waves in gale conditions for a given fetch can be made by using the formula  $1.5 \times \text{square root of the fetch in nautical miles}$ . With this it is possible to calculate the maximum height of waves on a lake or large stretches of







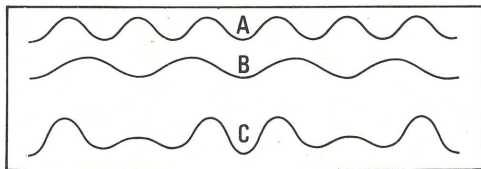


water. For example, a gale blowing from Calais to Dover would only raise waves just over six and a half feet from trough to crest, and on a lake one nautical mile across a wave height would occur of not more than one and a half feet.

These waves, now that energy is stored within, if allowed to continue in open water without further assistance from the wind and without being adversely affected by rain or opposing winds, will continue for a considerable distance under their own power. For a further example, a six foot high wave with a length of fifty feet would travel fifty nautical miles and only lose one third of its height due to this kinetic and partly potential energy stored.

Once this is realised, it is possible to understand that once a wave is formed and established, successive winds can add or subtract to this by imparting further waves to those already in existence, these may have different height and length but will combine to give a more complex wave form.

It is to this effect that sea lore has given the saying 'every seventh wave will be larger.' This may in certain circumstances be true, but more likely it will be of a different frequency such as every other wave, or one in twenty. It will only be by continued observation that a regular pattern can be predicted.



In the above diagram showing three wave forms, A is to indicate one of local origin and B is the remainder of a wave pattern formed further at sea. In C these two forms A and B have combined to give a more complex pattern where every third wave is the largest.

You may ask 'how can I use this information?' In launching from a fairly steep beach it can at times be extremely hazardous, particularly with an onshore wind. It will not be the first or last time I see dinghies damaged and come close to being wrecked through bad handling and trying to launch at the worst time, with the largest surf

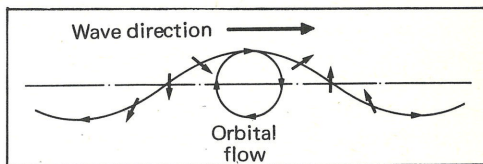
about to break, when a few seconds wait would allow a reasonably comfortable launch.

If then, a launching party is in operation, the man at the bow must remember to lift the bow when the waves break and not to worry about getting his head wet, pushing down on the bow to keep himself dry will have so much water loading the boat as to render it completely unmanageable.

The helm and the crew, preferably, want to be in the boat with sheets ready to power the sails, and the rudder raised but clipped in. The decision to go must be that of the man at the rear or side who should have the pattern of waves in his mind, then on the 'push start' the sails should be pulling with the centreboard and rudder lowered as far as conditions will allow.

Two things to remember: don't get into irons but keep the boat driving; and don't launch with obstructions on your leeward side.

Once out of the surf you will find the waves lessen in their intensity and you will be in a reasonable and generally bearable swell. These will be the waves you will be sailing in and learning to use them will be one of the hardest aspects of sailing you will have to contend with.



If tidal flow is discounted, the surface movement relative to ground of any particular particle of water, although obviously up and down, also moves fore and aft by an equal amount. In deep water the surface movement of these particles is circular and is referred to as the 'orbital flow,' the diameter of which is equal to the wave height. By being able to utilize this motion in racing an advantage is immediate on all points of sailing.

When beating through waves a rather sinuous course has to be made, you will find that in the trough the jib will lift and you will have to bear off slightly to maintain full speed. This is due to the orbital flow at that point moving the boat forward and sideways into the wind, this in turn causes an increase



in wind strength and moves the apparent wind further forward.

On the faces of the wave, a mean course is held as the flow is mainly up or down, but on the crest the orbital flow is moving the boat back and sideways away from the wind. In this situation the wind is freer due to the apparent wind moving further aft so that you can point higher into the wind.

On the downwind legs, the waves will be passing under the boat, occasionally giving you one of those magnificent mouth opening surfs, where your boat literally leaps forward. Being able to prolong these movements more than your competitors is once again utilizing the orbital flow. Lengthening these periods on the crest can be done by moderately moving your weight fore and aft to either increase or decrease the wetted areas on the appropriate surface of the wave form.

The time to move your weight aft is when the crest is nearing the transom, by increasing the wetted area on that section of the boat, and correspondingly decreasing the wetted area of the bow which is in the opposing flow of the trough section of the wave form. This brings into play a number of effects: an overall drop in the total wetted area due to the wave slope, squaring the the sails to the wind thus giving maximum drive, using more efficiently the forward motion of the orbital flow, and lastly by reason of this increase in speed the 'false vertical' effect of a wave is nullified allowing gravity to assist in maintaining your position near the crest.

It then also applies that the time to move your weight forward is when on the back of a wave, where the transom is in the trough applying a retarding force, in doing so you reduce the wetted area and thus lessen the drag.

Whilst on this point of sailing it is worth mentioning two extremely unpleasant things that may occur, these are 'broaching' and 'submarining,' and to use that well worn cliché, prevention is better than a cure. To do this an understanding of the cause is necessary.

Broaching to is a term applied when, in a following sea, the boat twists on the forward face of a wave by the action of orbital flow. If one imagines a boat sailing obliquely across a following sea there will be a point

on the forward face where the bow is in the trough and the transom on the crest. The effect of orbital flow in this case is to push back the bow and the transom forward, trying, and often succeeding, in bringing the boat beam on. The centreboard then acts as a brake and the boat capsizes by tripping over. A further contributory cause to this twist is that, due to the bow digging in, the centre of lateral resistance is moved sharply forward creating excessive weather helm. This together with the rudder being in the forward moving water of the crest can lose up to thirty per cent of its efficiency. So it is easy to understand that when you broach it is often more by luck than judgement that a recovery is effected. The only solution is to quickly move your weight aft and balance to prevent heel. To prevent broaching, never sail by the lee, only use about half centreboard and maintain correct trim on the forward faces of a wave.

Submarining is where, while tramping down a wave, the bow digs into the wave in front and disappears, recovery by moving your weight aft although bringing aboard a mass of embarrassing water is better than taking a chance on going A over B! The cause is the same as in broaching, except that in being square with the waves, the bow is pushed back and down with the transom being pushed forward and up. Thus the twisting action is in the vertical plane. Prevention is once again, on that part of a wave face, keep your weight aft.

The reaching legs, as with the beat, need constant correction of the rudder, because the orbital flow as before is constantly pushing you into and away from the wind. It is on these legs when marginal planing conditions exist that gains of a hundred yards and more can be made. By bearing off when the crest is nearing, a plane can be induced, as the additional speed given by the flow is sometimes all you need to kick the boat up. Careful and quick adjustment of sails and trim will then enable this plane to be maintained, possibly for the rest of the leg.

Rounding buoys in a heavy sea can be chancing your arm if you try to cut corners. Surface flow can suddenly move you towards the buoy, which at the same time can be moving towards you, with the inevitable



result of having to re-round. If you are not therefore travelling very fast, do not try and cut fine as you might on a lake.

As with all things the perfect does not exist; the waves I have written about assume true wind and water — these in nature are never found. Variations in wind strength and direction together with the coastal outline all add to complicate the wave pattern.

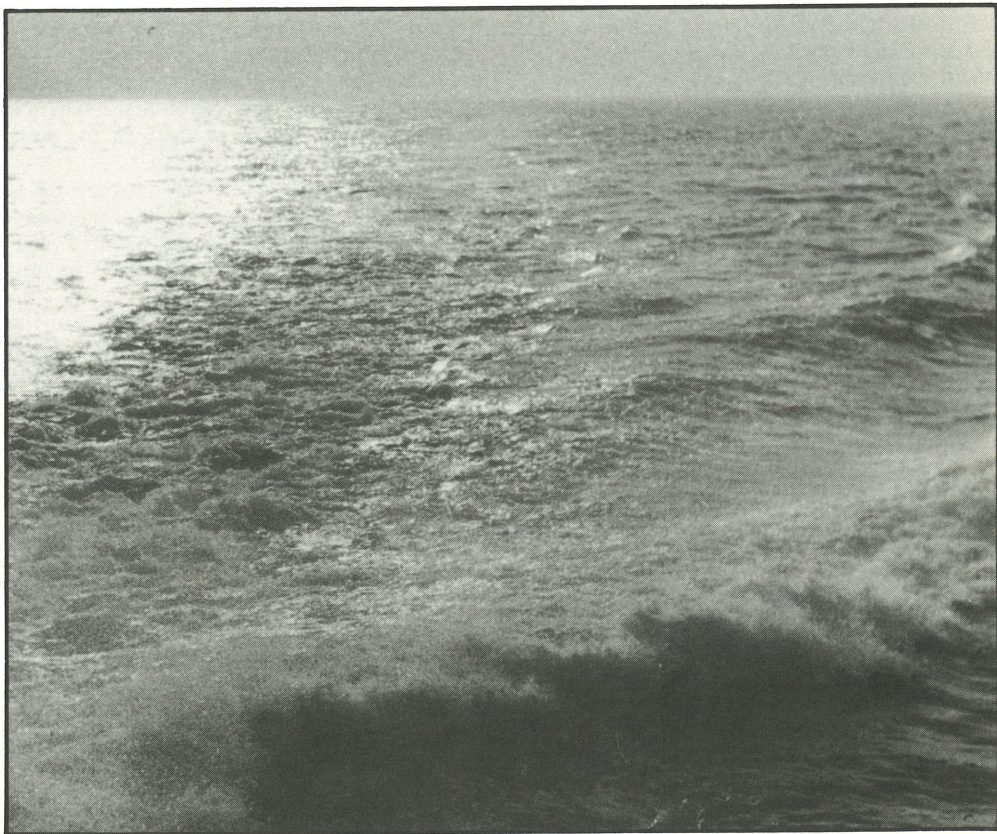
Waves, when nearing the shore and moving into shallower water, have stored within, a vast amount of energy and changes take place in the form before this energy is expended on the beach. The effect of the sea bed on the wave form is firstly to slow down the speed of the waves and in doing so the wave height is increased. The orbital flow instead of being circular, becomes elliptical, eventually the friction of the sea bed retards the trough sufficiently for the crest which is still accelerating to overtake and break into surf.

Race Officers are quite often the subject

of unfair criticism by sometimes abandoning or postponing a race. What the visiting helmsman do not realise is that possibly at the estimated finish of a race the surf will be breaking at a harbour mouth or at the start of a steeply shelving shingle beach, where waves will be expending their energy with sometimes savage intensity and no sympathy for the unwary. Pressures on a wall where waves are breaking can exceed six tons per square foot and even an incoming swell of three feet striking a wall can produce pressures of more than a quarter of a ton per square foot on a resultant standing wave.

In common with the Secretary's usual disclaimer, the writer also accepts no responsibility, whatsoever, for anyone either pole vaulting up the beach (a la Maxi), submarining or tunnelling under the Club-house, not finishing, or just not winning!

Nonetheless — Good Sailing.





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# You can't capsizes a Mirror

by Hugh Cundall

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You can't capsizes a Mirror, I said to Jamie, my (then) 8 year old crew.

Ian, my 12 year old, started to build our Mirror at school in 1970. We almost finished her in time for the summer holidays in Swansea, where we had to combine serious recreation — I was crewing a friend in the Albacore Nationals! — with, hopefully, a family holiday.

We finished her in our little spare time during the Albacore Nationals and had a trial sail. Then, her first big event was to be the Club regatta on the Saturday. It was blowing a bit, and I was crewing in the Albacore, but the Club provided a young helmsman who was supposed to know more about sailing than Ian, so he and Ian set off for the Mirror race.

The helmsman did *not* know more than Ian, and they capsized before the start . . . (He froze onto the sheet in a gust; when I was first taught to sail as a toddler, I was told "If you let everything go in a gust, she'll look after herself").

Two days later, we took her out through the surf in one of the Gower Peninsular bays. I'm not very good at sailing off a beach; on the way back in, we proved this, and also that the mast, stuck into the sand, is not strong enough to hold up the weight of the boat! Score so far: 2 capsizes in 3 times out! And I've been sailing dinghies for 35 years!

My gaff is specially made to suit a 1 7/8in. dia. mast, and by the most fantastic piece of luck, the only round timber in the whole of Swansea was 1 7/8in. Quite incredible. Anyway, by hard work we had her sailing again the next evening and had a very successful race in force 5/6.

The rest of that year was uneventful. The next year I did not get her out until I was asked to go to an open meeting at a club on the River Trent near to my home.

There were three races. The first was almost a disaster. I arrived late. I'd left my centreboard and rudder behind. I had to

pick up a scratch crew. And when we launched 1 second before the 5 minute gun, the spinnaker halyard came loose and snarled up both jib sheets. It was blowing force 3/5, and the start gun went while we were still trying to clear the snarl — but there was a general recall. Then we went aground. Finally we were cleared up — sailed back to the line — saw a chap looking all earnest with his finger on the trigger of the pistol (we had no idea of the time — much too busy to look!) so we turned round to the start, found a hole at the starboard end of the line and were never headed thereafter! Talk about luck.

The second race we were much better organised, and got a good start. Again we worked out a good lead and then, running down to the finishing line, just in front of the clubhouse. I decided to do it properly and gybe for the line.

Looking back on it, I think the centreboard must have been too high so that the kicking-strap caught on it . . . We righted her and climbed aboard again for the line, and still managed to win. We got a round of applause from the clubhouse, whereas what I deserved was a castigation for gross carelessness throughout the day.

The next time out was another open meeting, this time in zero wind conditions, with young Jamie as crew. What, I hear you say, surely you did not capsizes in zero wind conditions?

It was the last race of the day, and the cup depended on winning it. We had a good lead as we passed the clubhouse on the second beat, against the near-zero wind and the stream, and I was trying to teach Jamie how to roll-tack. We were getting better and I said "now let's have a really quick one."

Looking back on it, I think he must have come across much quicker than previously and there we were, both sitting on the same gunwale . . .

At first, I worried that he might be under the boat, until I heard some reassuring, if unhappy, noises. I went and heaved on the centreboard and could not understand why she would not come up; then one of the boats that had put out from the clubhouse told me that my crew was clinging to the upper gunwale on the other side! So I had to swim round and cajole him into letting go



and work him round to the transom – all tangled up in the mainsheet, can't you just imagine it? (Or have you never capsized?) Then back to the board, and up she came at last. Back to the transom, a quick hand under Jamie's bottom to tumble him into the boat, then unceremoniously in after him, and get her sailing again.

As there had been some unhappy noises while he was in the water (he said afterwards that he knew he could not swim out of his depth, and had forgotten he'd got a life jacket on!) I asked if he wanted to give up and go in, since we were right in front of the clubhouse(!), but he would not hear of it.

Then we had the most fantastic piece of luck – the other man who could win the cup had passed us while this was going on,

and was short tacking against a fickle wind and stream; we picked up an enormous lift that took us straight up the middle, caught him on port at the buoy, and finished miles ahead!

Only to have to retire because someone else protested that we had touched the first buoy without knowing it, but he had not told us at the time.

Still, we got second prize, and Jamie was very chuffed with his, particularly when the Commodore's wife could not believe that anyone so small had been the crew – and we got a mention in the Commodore's speech for entertainment value!

But, nowadays, Jamie does not always give me unequivocal support when I tell people how difficult it is to capsize a Mirror...

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## Down with the spinnaker

by Harry Taylor

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Let me take you back a bit. Except for the very young, we must all remember the time when our sport was simple and peaceful, when Mirror men were placid, carefree people, moderate of tongue, kind to their wives. What went wrong? Why does the ten-minute gun now strike such fear into them? Why are they now furtive and anxious, jumping at any sudden noise? Why does the five-minute gun now strike such fear into them? I put it down to the referendum – it came in about 1967 I think – did we want spinnakers? Ten thousand innocents said 'Yes' and things have never been the same since. Looking back, I'm not sure that many of us quite knew what a spinnaker was. We do now alright – it's an invention of the Devil and should have no place in a civilised society. They said they would make sailing more interesting. No-one will deny that that promise has been kept!

With other sails you know how you stand. Talk about the belly of your main and it won't take offence. Over sheet your jib and it will hardly murmur. Mishandle them as you will and they will forgive. But take

one liberty with the spinnaker and it immediately becomes a spiteful, vindictive thing, like a deck chair in the hands of a music hall comic.

The old timers knew better. Read any book on the subject and you will find that, after rounding the Cape and Easting Down before a good Westerly, every page is full of T'gallants, Royals, Skysails and the like being hoisted, braced or trimmed to oaths from the drunken mate. But Spinnakers? Not a mention. They had scurvy and belaying pins – we have spinnakers.

So what is wrong with them? Well, to start with, given a fresh breeze, look into the dinghy park, where boats are being rigged for an important race. You will find spinnakers blossoming everywhere from boats on their trolleys. Now the first thing we learnt about sails was that they should only be hoisted into wind. However, that, we find only applies to proper sails. Because of its perverse nature, a spinnaker must be hoisted downwind. This, of course, is the opportunity it is waiting for and, before you can say 'Sally Karslake,' it has gone, boat, trolley and all. Few sights can be more daunting than that of a Mirror amok in a crowded park, like a rampaging bull on Market Day. When peace has returned, ask the owner why he put it up. If you don't get a Holt's quick release end fitting up the nostril, he will tell you that he was checking his rigging. He was, of course, doing nothing of the sort. It's



all psychological and the real purpose is to persuade you, once on the water, to put up yours, with the inevitable tangle which will result. This is called 'tactics'. Some people would say it is unfair tactics, and that to give everyone a fair chance, flying the spinnaker should be compulsory, like the burgee.

The first leg of a race is, if possible, always a beat. Other explanations are often given for this, but the real reason is to give everyone an excuse for not using the spinnaker, without loss of face, until they have settled down — it is sometimes called, for this reason, the 'leg of grace'. You can take some comfort from this, in the same way as it is nice to find a queue at the dentist's but before long, as you approach the windward mark, a decision must be made, to spi or not to spi (Hamlet, I think) on the reach. If you don't and the rest do you will feel naked. If you do — well look what happened last time in a Force 5. You could look up front and see how those who have already rounded are coping. This unfortunately will not help much as these are your Peter Barnes's and Derek Beeres who, you should notice, have a completely different sail, a powerful but docile creature, quite unlike your untamable monster. In any case, as soon as they have persuaded you to put yours up, they are likely to take theirs down.

But a warning to you not to unleash the beast may not long be heeded when Mark Rushall (who got tangled with the warp of an angler's pram and was further delayed by an ear full of ground bait) half fills your boat with spray as he screeches past on the reach. The blood rushes to your head and, before you are aware of it, out come the fateful words 'Spinnaker Up'.

If you are lucky nothing happens. Lady wife, saying that there is nothing about this in her contract, carries on bailing. She may, however, decide to humour you, or worse, you may have fitted one of those contraptions whereby you hoist the sail yourself. Ingenious as it is, it leaves you short of a hand to steer with and, to the peril of those around, your boat shoots off in all directions, like the dog which has discovered mustard in its meat. And what the heck is she doing with the pole?! You can now ponder on how pointless it was hoisting the sail ashore. If it was right then, how can the

sheets now be inside the forestay, shrouds and jib sheets? Of perhaps less importance why now is the sail number vertical instead of horizontal? I am afraid there is no explanation — it's the perversity of the spinnaker again. Likewise there is no obvious reason why all those people, many of whom could not even spell 'spinnaker', are now so far ahead.

Don't brood too long because the time has come to make peace with your crew. It is essential to be on speaking terms again before the leeward mark. Humble yourself, explain that those words just slipped out, promise her something, anything, for the spinnaker must now come down. And if there is anything it resists more than going up it is coming down again. You should bow to the inevitable here. As surely as toothpaste will not go back into its tube, a spinnaker will not go back into its boat. It will go into the sea where, as Cinderella's coach turned into a pumpkin, it will change into a sea anchor, and a highly efficient one at that. It takes time but this little difficulty can be sorted out surprisingly easily, provided you don't intend to use it again. People have even caught fish in this way. And you may be able to find the pole on the next lap.

A good story should have a happy ending. Surveying the tactical situation, you find things not quite so bad as they appeared. Immersed in your own troubles you had forgotten that most of the others also had spinners. Admittedly there is now no-one actually behind but a good quarter mile beyond the mark, and still making good speed downwind, are two unfortunates who can only have their halyards jambed. Another, which has rounded the buoys, seems to be making awfully hard work of the beat. Getting closer, you notice that a spinnaker sheet has tied itself round the end of the boom with a series of knots not seen since the days of the Cape Horners. Your spirits have now recovered enough for you to consider a few words of encouragement as you slip past. If his response is a bit quieter than you expected it has nothing to do, as you first thought, with good manners. The sheet, you now see, is also wrapped round his neck. No, all is not lost, and if you can keep the Devil out of you and the spinnaker



where it belongs, you will no doubt pick up more places on the next downwind leg. For surely some of the others, who got away with it this time, still have their lesson to learn.

The discerning reader may feel that in this narrative a leg appears to have been left out of the course. What happened to the

second reach? He is right, but this is no accident. It would have been impossible to write an article suitable for younger readers and those of a nervous disposition, and yet give a true account of the catastrophies and the language to go with them at the jibe mark.

Yes, enough is enough!









# Doctor, Doctor

by Michael McNamara

You would need to be a Van Gogh, at the very least, to capture the beauty of a fleet of racing dinghies. The movement of hulls; of sails and of water combine in a unity impossible to describe. Unfortunately from the artists point of view, one or two of the dinghies would spoil the overall effect. These would be the upright ones, the ones whose sails flapped less and whose hulls made less noise in the waves. In fact, the faster ones. The artist would have to paint his pictures just after the start or invest in a long thin piece of canvas to get them in.

This problem of achieving speed faces every dinghy racer. Page after page, book after book is written listing the physical processes of achieving it. Yet even after stuffing themselves with knowledge very few back markers manage to leap through the fleet. Most skips tend to blame the boats as not being fast enough. I know for instance of at least two championship winning boats which had centreplate and mast positions altered radically by their new owners. It is, of course, a classic case of the old chicken and egg routine — which does come first, the good helmsman or the fast boat?

In view of this then, isn't it surprising that so much attention is given to the boat and so little to the attitudes and state of minds of the crew?

Perhaps there would even be a good opening for some enterprising psychiatrist. He would be the catalyst to sort out the basics of the boat speed and then to help the crew organise themselves as the most important segment of the crew; hull; sails triangle. He would obviously have to modify his normal routine and change his 'office' a little. The traditional couch would have to go and be replaced by a sitting out bench — adjustable of course so that the necessary degree of uncomfortability could be achieved. Added refinements could include a fine spray and a noise machine — to include both boats' sounds and the snarls of the helmsman demanding (or rejecting) rights, etc.

Surely then when his soul is suitably

empty of it's speed inhibitions and neurosis, our back marker could start his climb up the fleet.

Mind, it would not be easy, years of suppression don't disappear overnight but think of the advantages in saying "My boat is not pointing today but never mind I really know that that thing I saw in the wood shed can't harm me now."

A whole new language would have to be learnt and distressing new symptoms analysed. Take for instance that tragic case of "I'm on starboard and I feel great" neurosis. This exhibits itself in the helm who is calm and gentleness itself when at home or even in his car, but when he is on starboard becomes a demented gibbering fiend. Instead of rationally deciding only to use his right of way when he is going to get an advantage from it, he uses it willy-nilly and to hell with the end result. He's always being lee-bowed (the backward glance and accompanying grin reduce his morale even further) or being stopped dead as he crashes into some victim. Although I've yet to see rows of little sails just like swastikas those much loved on W.W.2 aircraft, the scratches, dents and chips are evidence enough. This unfortunate man has to learn that this starboard advantage only lasts for a second during the leebowing; the subsequent tacking off (usually into a header) and the crunch can be more permanent — and result in a lost race, even a series. His purging could be lengthy and, of course, there is always the chance of relapse because temptation (just like that of alcohol and tobacco) is always there. Though, I think, the foundation of 'Starboard Anonymous Sailing Club' would be going a little too far.

A sad business but no sadder than the oft seen schizophrenikeeler. These fall into two categories — the heavy weights ("I never free off for anything old boy") and the tiny bots (who never sheet in). It doesn't really matter which is which, the end result is the same as the boat presents to the water a shape which its designer never intended; creates waves which look terrific; looks full of action — but sails like a brick. The treatment for the two types of heeler is different. The heavy brigade have to learn that there comes a time when a fuller sail creates just too much sideways drag and there is no substitute for a proper aerofoil.



The light weights have a much harder problem. They have to come to terms with the fact that there is no magic mast that will bend in, out, up, down, sideways and keep them up with the fatties and that there will be other occasions — marginal planing perhaps — when their weight will be very much in their favour. The motto for everybody — large, medium or small — should be “Don’t be proud if you’ve got too much, get rid of some.” In other words let the ruddy mainsail go a bit.

Which thus brings us back to this chicken and egg thing, for if we could alter the shape of the sails and if we could adjust the boat, we could adjust it to suit the conditions and thus suit ourselves more.

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## Windshifts

by D J Derby

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What are windshifts? Well, first and foremost they are a rather convenient peg on which to hang your excuses for not winning particular races. I am convinced that they account for at least half the races which I lose, but I am working on it. Helmsmen who fail to detect, and make use of, windshifts have very little chance of ever consistently winning in top competition.

In this article, which I hope you will find helpful, I only propose to deal with the small oscillating windshifts which occur all the time, whatever the conditions. These shifts, about 10 degrees (5 degrees either side of the mean wind direction) arrive roughly every 2 to 3 minutes on inland waters. On the open sea they tend to be less pronounced and more irregular, but they are still there just the same. If you can time your tacks as early as practicable after detecting these shifts, you can gain about an 8% distance advantage over a boat making normal progress, which is 140 yards on a mile long beat! This is one reason why our top helmsmen consistently get to the front without actually moving any faster through the water. If you want to be up there with them then you must learn how to spot and use windshifts, a technique which requires continuous concentration during a race.

In any case, I can hear you say that there are no sailing psychologists and even if there were there is no way that they could advise all the sailors.

Here is a case for each individual sailor to be his own psychiatrist. There must be no cheating and no matter how painful to the ego the critical self analysis has to be frank. Otherwise it will not work.

So keep in mind that glorious goal; that wonderful achievement; that light at the end of a very long dark tunnel; that burst of sunlight through the angry storm cloud; that moment when you win your first race. Mind, even that doesn’t mean the war is won, merely that the first battle is over.

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There are three basic ways of detecting shifts.

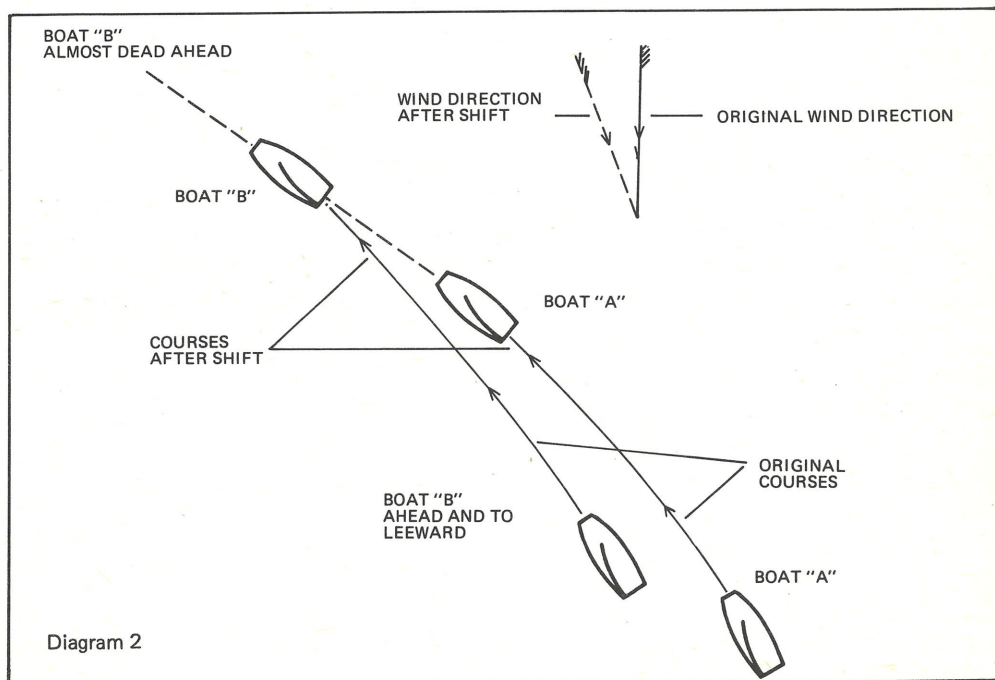
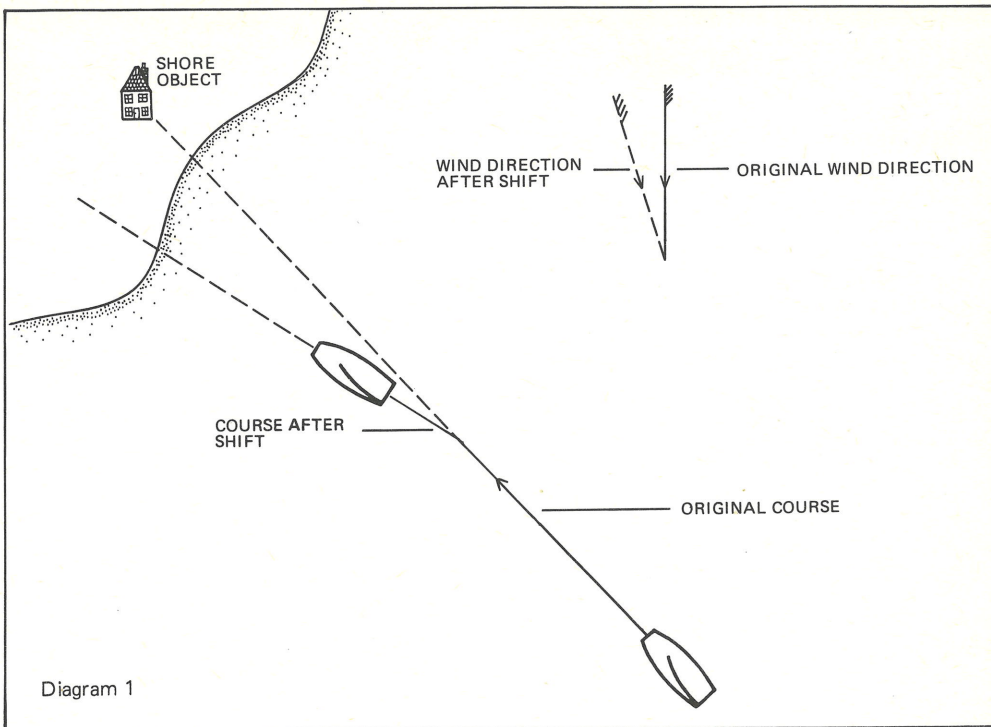
The first method is to line up on some conspicuous shore mark (preferably not a farm animal or flashy sports car) after having come round on to a new tack. When you can no longer lay your mark ashore, you have been headed and it is time to tack. See diagram 1.

The second method is to make use of surrounding boats sailing a similar course to your own. When you are headed, boats which were previously ahead and to leeward, will now be almost dead ahead and it is time to tack. See diagram 2.

The third method is to use one of the small tactical compasses which are available. When sailing to windward with one of these fitted and set up correctly, the compass needle will lie along the line joining the red and green sectors shown on the face. When you are headed the needle moves into the red sector and you must tack.

I realise that the foregoing all sounds very nice and simple, but what you must do is take out your boat and practice. At first you will notice very little gain since no doubt you will miss some shifts, imagine others which are not there and also probably lose ground because your tacking technique needs improving. However I am sure that with perseverance, in time, you will start to regularly make up ground on the beats until eventually you happily find yourself leading the fleet.







# Proper course

by Ron Burdon

The International Yacht Racing Rules are a headache, all 78 of them! And more will be added. . . I doubt if anyone can recite them all, and understand them.

For the paltry sum of 75p in 1975 anyone can purchase from the RYA their booklet No. YR1/73 'Yacht Racing Including the International Racing Rules' and although this booklet does not interpret the regulations, if Part I of the rules is understood, i.e. Definitions, then Parts IV and V can be worked out.

Apparently the IYRU was asked for simpler rules so that beginners could understand what its all about, but as the rules have to be watertight, they declined. They did, however, give a summary, saying that if anyone racing obeyed these four points, then they would keep out of trouble.

1. Opposite tacks – The boat on port tack shall keep clear.
2. Boats on the same tack – The windward boat and the boat which is clear astern shall keep clear.
3. When two boats come to a mark or obstruction overlapped, the outside boat shall give the inside boat room to round or pass.
4. Except when she has luffing rights, a boat shall not alter course as to force another boat to alter course immediately to keep clear.

People ask what is the 'proper course.' It's in the Racing Rules, Part I, as follows:

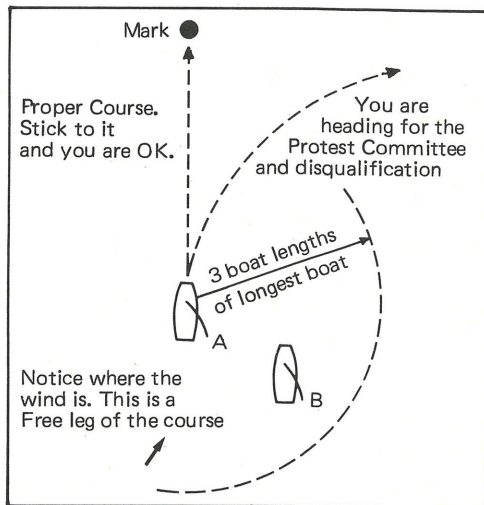
*'Proper Course.* A Proper Course is any course which a yacht might sail after the starting signal, in the absence of the other yacht or yachts affected, to finish as quickly as possible. The course sailed before luffing or bearing away is presumably, but not necessarily, the Proper Course. There is no Proper Course before the starting signal.'

I am not trying to put over oneupmanship – I had to get the exact wording from the rules. I think that most of us know the gist of the rules and rely on 'Elvstrom' or 'Pinaud' for detailed situation analyses, and if we all obeyed them implicitly (that's a

laugh for a start) there would be no need for protest committees.

*Rule 39 – Sailing Below a Proper Course.*

'A yacht which is on a free leg of the course shall not sail below her Proper Course when she is clearly within three of her overall lengths of either a leeward yacht or a yacht clear astern which is steering a course to pass to leeward.'



While B is within 3 lengths of A, then A shall not bear away or interfere with B. Do not pull the tiller towards you (to windward) and so put the transom closer to the wind.

*Rule 37.3 – Sailing above a Proper Course.*

'A yacht which establishes an overlap to leeward from clear astern shall allow the

## Simple but effective

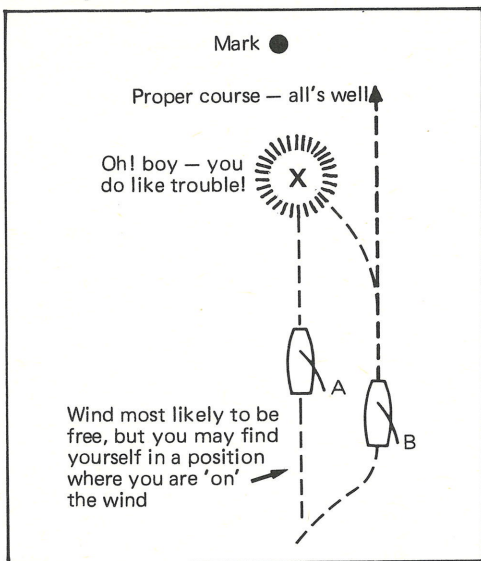
by David Howell

When beating into waves, move crew weight aft to lift the bow of the boat. This assists the boat to ride over, rather than through the waves. The blunt nose of the Mirror is not ideal for cutting through waves as it tends to be slapped, it is better to 'lift' the bow over.

When offered a tow from a power craft, take a line from the craft, make one turn around the base of the Mirror mast. Hold



windward yacht ample room and opportunity to keep clear, and during the existence of that overlap the leeward yacht shall not sail above her Proper Course.'



B has established the overlap by sailing from clear astern into A's lee, while the overlap lasts B cannot luff (sail above the proper course in this case) to impede A.

To remember the difference between 'above' and 'below' a proper course — sailing above the proper course you are putting your bows nearer the wind (LUFFING); sailing below the proper course you are putting your stern closer to the wind (BEARING AWAY).

the line in the hand whilst being towed — thus making it easy to release if the power boat goes too fast. I have had the misfortune to have my bow transom broken by a motor launch idiot!

Racing without a spinnaker: when running, goosewing the sails, and sail a dead run by steering a wind course. Steer by watching the sails, not the racing flag. If you do not lay the mark, cover the final distance on a broad reach.

When beating, turn head aft, and look over your shoulder without turning your shoulders; the extremity of your vision will be your approximate line after tacking.

## Don't blame the Tell-tail.

(He's really telling the truth)

by Gerald Rockett

As one who feels completely blind without them, it came as a surprise to me to find how few Mirror sailors actually use sail tell-tails.

By fitting tell-tails on both sides of a sail, it is possible to 'see' the wind flowing over the sail. For maximum drive the wind should, in theory, flow smoothly across both the windward and leeward surfaces. If both the windward and leeward tell-tails are streaming horizontally, this is happening and the sail is set at the correct angle to the wind. However, if the weather tell-tail is streaming horizontally but the leeward one is lazily gyrating or pointing in another direction, this shows that the air flow has broken down on the lee side of the sail and turbulence is occurring. To correct this, the angle of attack of the sail to the wind must be reduced. Conversely, if the leeward tell-tail is streaming but the windward one is not, then turbulence is occurring on the windward side and the sail's angle of attack must therefore be increased.

Tell-tails have many applications, for instance, controlling the amount of twist to allow, or as a guide on how far to ease the sheet on a reach but, by far the most useful purpose, so far as dinghy sailors are concerned, is as a guide to pointing when sailing to windward. For this latter purpose, two tell-tails are all that is required and I recommend that these be fitted approximately 6in. (153mm) behind the foresail luff at about 2ft. 6in. (0.762m) and 3ft. 9in. (1.143m) up from the tack. When sailing to windward, with the foresail sheeted in, if the windward tell-tail is not streaming then you are pointing too high or, alternatively, if the leeward one stops streaming then you are pointing too low.

It is frequently argued that tell-tails are not necessary for sailing to windward because back-winding of the foresail luff will show when the boat is being pointed too high. However, tell-tails are much more sensitive,



frequently showing a breakdown in the wind flow long before the sail has started to lift. Also, tell-tails have the advantage of showing when the boat is being pointed too low, thereby helping you to quickly pick up an advantageous lifting wind shift.

A tell-tail can be made from any light material or thread. I favour spinnaker nylon cut into a strip about 3/16in. (5mm) wide because this is a very light fabric and consequently very sensitive. It also has the advantage of drying quickly. The most popular and more easily obtainable alternative is a single length of wool, but, if you use this, avoid making it too thick because if the tell-tail is heavy it will be insensitive in light winds. Remember also to be careful over your choice of colour for the tell-tail because you must be able to see the leeward one through the sail cloth. Black or white are probably the most suitable colours.

You can buy complete tell-tails which are supplied with a sticky disc to attach them to the sail-cloth. However, these discs can

become unstuck and the tell-tail blow away (inevitably at a critical moment) unless you are careful. Instead, I recommend that you make a small hole in the sail cloth with a bradawl and simply push the spinnaker nylon or wool through, tying a knot on either side of the sail to stop it slipping out. Incidentally, the tell-tail needs to be about 5in. (127mm) long on each side.

Finally, one word of warning — wind is fickle and its flow can be easily disturbed, particularly when the boat is pitching in a sea. Consequently, local areas of turbulence can be created which cause the tell-tails to give the occasional misleading information, and when first learning to use tell-tails, this might confuse you. However, 'reading' tell-tails is an art which must be learned so that you are able to differentiate between correct information and false. My advice to you, therefore, is to persevere. When you have really got used to them, you will wonder how you ever managed to sail a boat to windward without them.

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## Is this your single problem?

by Harry Taylor

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*I understand that in the single-handed race at the National Championship, spinnakers are actually hoisted. I have recently completed my boat and found great difficulty in hoisting my spinnaker on dry land — but then I don't suppose there are many telephone wires for it to get tangled with at sea.*

I suppose a quick answer is 'with difficulty'. However, as you say, more and more people find that, even in single-handed races, it is usually necessary to use a spinnaker to be competitive.

Before the advent of spinnaker chutes, the practice was confined to the few who possessed three hands.

Nowadays, the real difficulty comes, not in hoisting the sail, or in lowering it for that matter, but in handling the pole. Here it is essential to have some means of holding the tiller while you are doing your business up

front. There are various ways of doing this, but what we are looking for is some means by which, having set the boat on a steady course, the tiller can be firmly fixed. I have a piece of elastic across the front of the aft tank which can be stretched over the end of the tiller though I am afraid this does allow more movement than I would wish.

Another, and probably better way, is to loop an endless cord through both transom drain holes and a point near the end of the tiller.

If this is tensioned by a trumpet cleat, the friction of the line through the drain holes will resist movement of the tiller.

Some people take a line from the end of the tiller and cleat it in the windward jib sheet jammer. Or a pole can be devised to extend the length of the tiller temporarily so that you can steer from the front. Except for the last method which I have never tried, you will find that, while you are messing with the pole, the boat will still go off course, and you will need to make minor adjustments to the course by shifting your weight and heeling the boat.

Without these devices, I don't think many people could handle a spinnaker single-handed.



# The human factor

by Deborah Evelyn

This article is aimed at the person who has been sailing a number of years and has mastered the basic techniques but still manages to finish well down the fleet. He probably spends a long time tuning the boat, worrying about sails, etc. when in actual fact the one thing that matters is the man at the helm. So what can be done to improve performance?

The most important thing is to reduce the number of mistakes. It is the person who makes the least mistakes who wins. Nobody sails a perfect race, but some people make a lot of common errors.

First of all, do you have the right attitude? Do you really want to win? No, seriously! Are you absolutely determined to win?

For example, there are some people who arrive down at the club just as the ten minute gun has gone, and, of course, they are late for the start. The only reason for being late is that you don't give your sailing the priority it deserves. And if you don't do that you won't win. At the other extreme, if you are really keen you can keep a log of every race, analysing all your mistakes — it speeds up the learning process.

However, you must get down and get out in good time. It gives you an opportunity to get the spinnaker up and see that it is not twisted (you should check this on land anyway). You can also practise the first leg of the course if there is plenty of time. This can be very useful because the first beat of the race most determines your position. I once won a race at South Shields because I discovered while practising tacking for the windward mark that the angle of the wind was just sufficient to let the tide (which was generally running against me) leebow me there. So instead of keeping in along the pier I went out into the tide and was round the mark miles before anyone else. Just by careful observation beforehand.

You *must* know the course. I make my crew stand with his back to the course-board and recite the course, times of starting and

high tide etc. It is a very good discipline. I learn it as well of course. And if one of us forgets something it is rarely the same thing so between us we are right.

The ones who get it wrong are those who write it down and then think they know it. Have it in your head — it is the only way.

Memorising nine numbers isn't difficult; beyond that you might need to write it down. Remember to note whether you have to leave the marks to port or starboard. Particularly if it is a figure of eight course or one where you leave one mark to one side and the next to the other. Make especial note of any marks which have a required side but do not begin or end a leg of the course. For example: marks indicating shallows or simply marks which you round at a later stage of the course but which happen to lie in the vicinity of a previous leg of the course.

Arrive at the start in good time, and after the ten minute gun don't go further than about 30 seconds travel from the line in any direction. This way you can be sure that even if the wind dies away you will still be able to start. Make allowances for the tide — it may sweep you away from or over the line. Don't forget if you are timing your approach to the line it will probably take at least ten seconds to tack and get going again. But don't be so busy practising the start that you find you have run out of time! If you haven't got a watch just sail up and down the line until the gun goes. It is so simple — I don't understand why anyone is late!

I am not going to tell you how to sail the race, but bear in mind these two rules of thumb:

1. Keep between your opponent and the mark.
2. Don't go off by yourself unless you are *absolutely* sure you are right.

They amount to basically the same thing and I have found them very useful. In a large fleet *clear wind* and *turn at the mark* are, I think, important factors.

Always carry a protest flag/spare (clean?) handkerchief. If you are involved in an incident make as much noise as possible ... and then look round to see who is looking at you — you will need all the witnesses you can get.





You cannot always rely on your crew as a witness. Even if the protest committee do not suspect him of bias, he may not have seen things as you did! Find out if he knows what happened — the classic phrase from one peeved crew at a protest was: “I don’t know, I was just looking at the jib as I was told to! (sob).”

It goes without saying that you have to know the rules backwards (and incidentally not just the rules of Part IV). After an incident, review the situation rapidly in your mind. Decide which rules apply and whether to accept a penalty or to protest. Tell the other helmsman straight away if you can.

Sometimes the fact that there has been a collision helps decide a protest. If you hit another boat make a lot of noise (by shouting) so that he cannot claim he was unaware of the collision. But remember if there is a collision you must protest or accept a penalty (or retire). If you do not, someone else may protest and you will be disqualified, even if the collision was not your fault, because you failed to protest or accept a penalty.

Finishing a race is just as important as starting. Find out which is the nearest end of the line and sail for it (even in some cases if it involves tacking). I have gained several places on the finishing line in this way. Conversely, if you have to keep ahead of one

other boat cover him all the way. Even if he seems to be going in the wrong direction, go with him, keeping between him and the line. If you let him go off on his own the wind may change and he may get there before you.

That is enough about the helmsman, what about the crew? First of all, how do you choose a crew? My ideal crew is a child aged 11 or over and not too heavy. I like a total crew weight of not more than 16 stone. But the most important factor is keenness and boys tend to be better than girls in this respect.

It is very important to keep your crew stretched so that he has not got time to be bored. As well as the usual duties, my crew has sole responsibility for watching out for boats coming up from leeward, and it is he who decides which one is going to pass ahead of the other or if we are on collision course. He is the one who shouts starboard. (But he doesn’t half get a telling off if he slips up). Incidentally, if you think you may be on collision course with a boat on starboard, it pays nine times out of ten to ease off and go behind rather than to tack (unless you are almost clearing ahead of him).

My crew and I always discuss how we are going to start and sail the first leg. As we approach each mark, I outline the procedure to be taken even if we have done it lots of





## Why here?

by an anonymous silent watcher of  
Mirror sailing

AS THEY watched over the sea-wall those hundred and fifty red sails became dots on the horizon. "Just over ten minutes to the off, I make it", observed the Sage.

"But what a pity!" said Molly, "we won't see a thing".

"Probably make out what's happening at the first mark", said the Sage, "it's always a bit difficult for spectators here. The shelter from the headland makes it hard to lay a course to suit competitors and spectators as well. Might as well go for a cuppa while we wait".

"Young Stephen's sure to ask if I was watching", Molly said as she poured. "It's a pity they couldn't have chosen somewhere like they had last year". "Yes, Molly, but there were snags there too, you remember. Car-parking was very difficult, and in any case, most people like to change from year to year. In fact, Clubs suitable to lay on a Championship for our number of boats are not easy to come by, and even the best are still a compromise. We must have good launching facilities for a lot of boats – it's not much fun for beginners if they spend the week trying to get through the surf onto the water. Then, of course, we need plenty of accommodation, we can't always expect to be so handy that we can play with our boats before breakfast, but that's the ideal some look for. And, of course, a Club's premises, being designed for their own needs, can never be really adequate for an influx of 600 visitors".

"Um, I'm beginning to see what you mean, and we also need somewhere suitable for the children, with a family boat like the Mirror, this is essential". "Oh yes, you could go on and on", said the Sage, "and we haven't mentioned the rescue boats. We need a fair number with a fleet of this size. Some Clubs are lucky and have members with their own boats who help out. Others have to hire and this can be expensive. But the most important thing of all, I think, is that the Club we visit must want us. I don't think all

times already.

We find at Tynemouth that on a choppy day crews are fine during the race. But waiting between races they start feeling seasick! It is simply boredom – keep them interested and they are fine. Unless the wind is particularly tricky I let my crew helm between and after races. I also keep a fishing line in the boat (I never catch anything). Actually it is Secret Weapon No. 5 ... you anchor or tie up to a buoy and drop the line over the side and it tells you what the tide is doing! (If I go on like this I won't have any secret weapons left). Like polishing the bottom of the boat – it doesn't do much good but it doesn't half scare the opposition! (And, incidentally, a smooth bottom is, contrary to popular opinion, more important in heavy weather than in light weather).

The main thing is that you should be confident in yourself and inspire confidence in your crew. Make sure he realises that you expect him to do exactly as you say and he will always respect you for it. (I personally prefer crewing for fussy helmsmen).

Finally, if you think the boat is not going well, then it won't go well. Not because there is anything wrong but simply because you are not happy with it. So next time the boat is not going so well ask yourself – is it me or the boat? It is probably you.



# Sail your own race

by Adrian Hope

Windshifts? Of course the wind shifts — we all know that. It usually happens just when you can lay the mark or when you are going to beat old Whatsiname for the first time. Perhaps the best thing that can be said about a windshift is that it makes a useful excuse for getting ashore after all the tea is finished and everyone else has gone home.

Now, if the wind blew nice and steady from one place as it should, we could beat to windward like the lucky chap in Fig. 1, making a nice neat angle of  $45^{\circ}$  or so to the wind.

It doesn't happen like that, of course. What happens is usually more like Fig. 2. You sail happily along for a bit, say from A to B, and then the wind changes. Suppose the wind shifts round  $20^{\circ}$  and comes more free, that is, more abeam, you will find that you can sail from B to C. This is all very fine and gets you up to where you

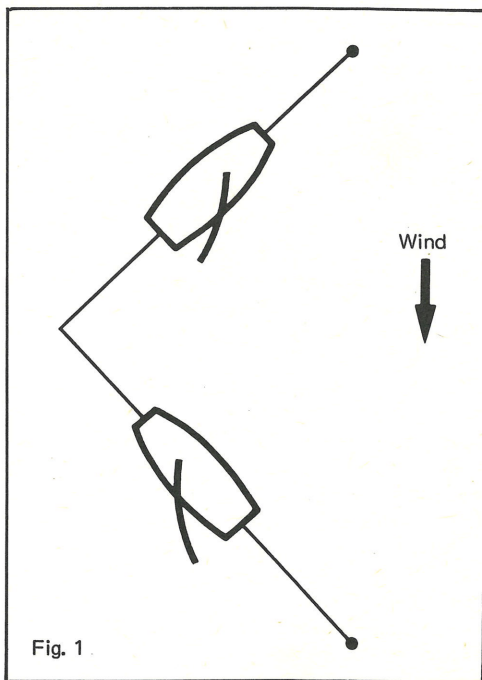


Fig. 1



of us appreciate how much Club members have to do for a successful meeting. Usually it will be found that most of their members have given up a week of their holidays for our benefit, and if a Club is as good as that, other Classes have their eyes on it, so we have to book up at least three years ahead."

"Well, I still think that when we have found somewhere nice, we should try and stick to it. Also I think a good Social Programme is just as important as the sailing, and everyone likes somewhere special for the prize-giving night. We wives are on holiday too."

"We do go back to places, you know, and talking of prizes, there is an art in that. Try to imagine choosing over a hundred prizes. That nice pair of ear-rings might be a beautiful prize for the third crew, but not if it happened to be young Jimmy's reward for not dripping the spinnaker pole over the side. I sometimes think the prizes should go to the losers anyway, the winners have had their reward."

"Shall we go back and see how they are getting on? I hope I can pick out Stephen. Where are they having the Nationals next year?"

"Dunno," said the Sage, adjusting his binoculars, "but no doubt we will be there."



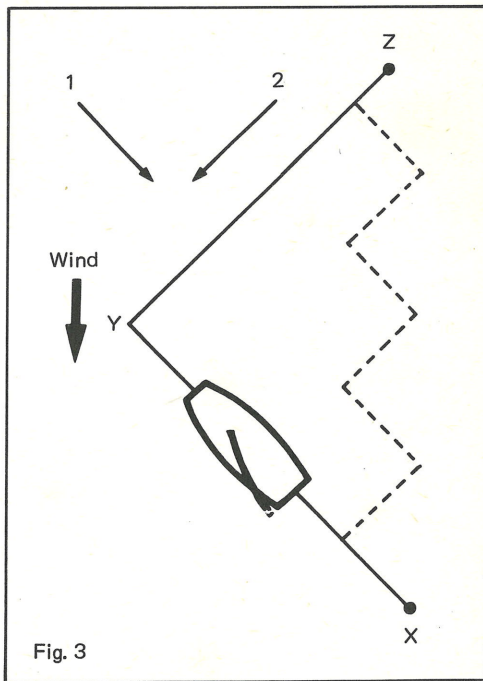
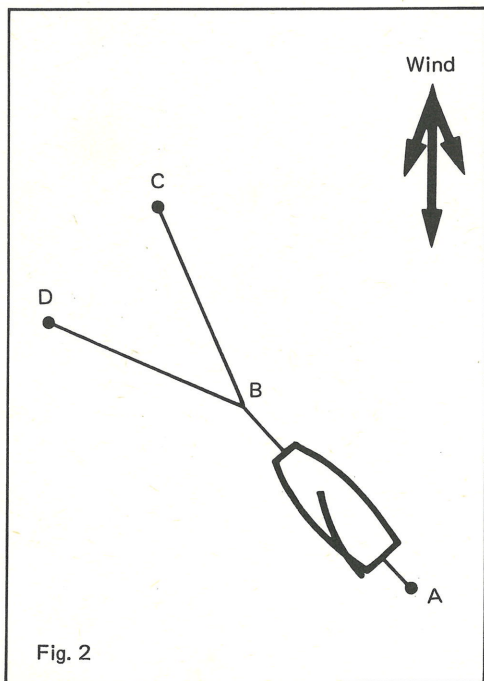
want to go — BUT, if the wind shifts the other way and goes 20° more ahead, you will find that you can't point any higher than D. This is not much use at all and very discouraging but there is only one thing to do — apart from swearing at your crew — and that is to tack. You will then find the wind is free on the new tack and you can lay a nice course up towards the windward mark so you sail along on that tack until the wind goes back to where it started. This gives us WINDSHIFT RULE ONE — *Tack on the Headers*,

Now then if you haven't already moved on to Repairs and Maintenance — have a look at Fig. 3. It is more complicated than the first two so as to make it look clever. Suppose you are beating up from X to Y and Z. It's a long beat, and just when you get to Y, the wind shifts. If it starts blowing in the direction of the arrow marked 1, then you have a beam reach to the mark, so you will go a bit faster. If, on the other hand, it starts to blow in the direction of arrow 2, you will find that you can't lay the mark at all and you are really in trouble. If you get a couple of shifts like this, you will feel as if you might sail round and round in circles

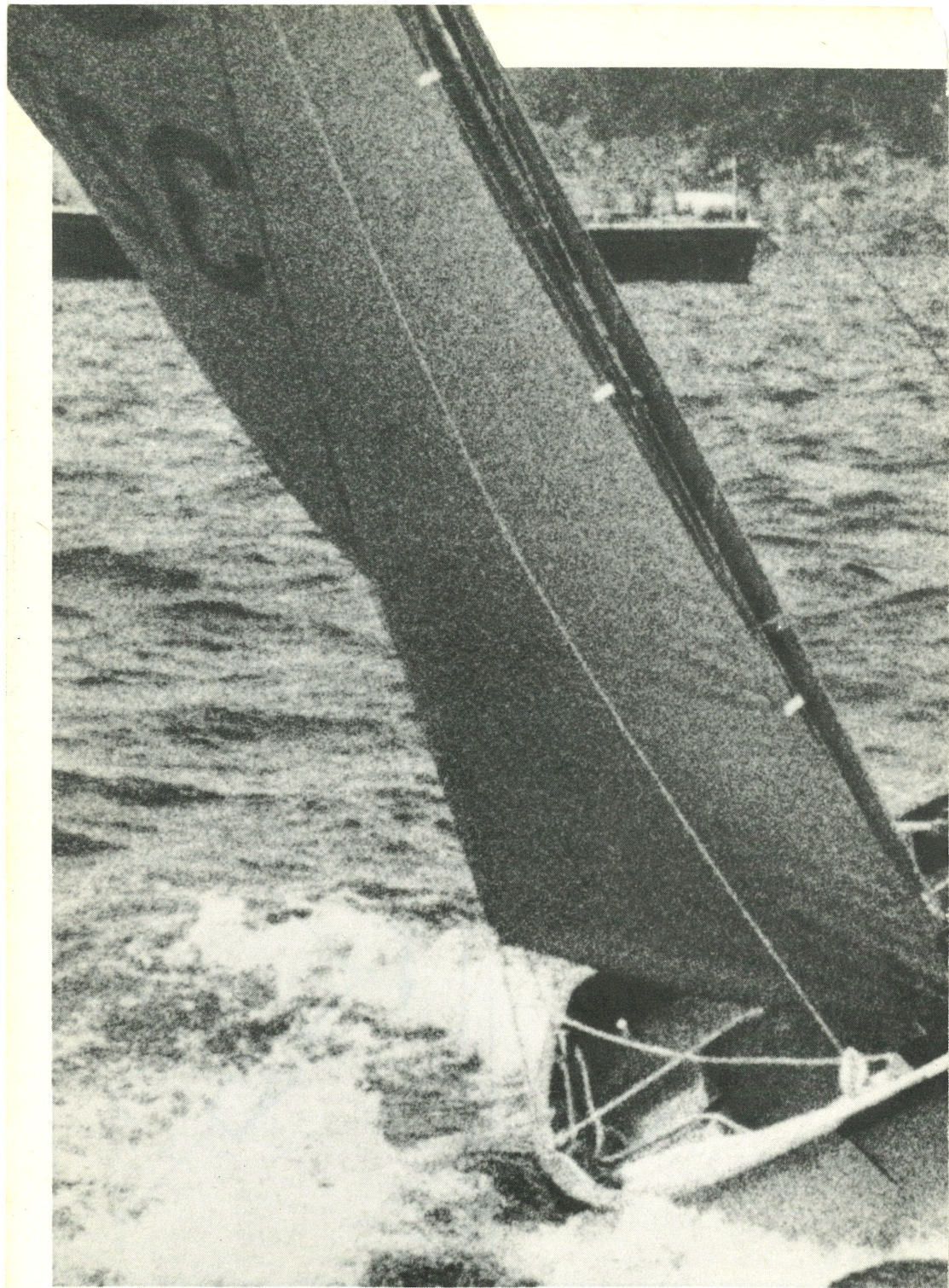
until you look like the Ancient Mariner. The answer to this one is not to get caught by sailing out to Y in the first place. Follow the course shown by the dotted line so that you can make the best of any wind shifts that come along by tacking on the headers. This gives us WINDSHIFT RULE TWO — *Stay downwind of the mark*.

If you think all this is quite easy and when do we get to the difficult part, then that's good because here it is. The difficult part is that when you decide to tack you find that someone is sitting on your transom and you can't. The answer to this is the simplest of all — you should have been somewhere else. If you are going to use the windshifts, then you must do all you can to get away from the other boats. If you get away in front, that's excellent, but at all costs get on your own. This points to WINDSHIFT RULE THREE — *Sail your own race*.

Well, perhaps we haven't covered everything there is to know about windshifts, but if you study your local conditions, keep a weather eye open, and remember the three rules, you will soon find yourself finishing in front of some people in faster boats. They will say, of course, that it's all just luck!









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# Sailing fast

by Peter Bateman

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*(PREPARED IN 1973 AND STILL RELEVANT)*

Sailing fast is an art, but as in all arts in the end it depends heavily on science for its application. Take sail shapes, more is talked about the curves of individual sails than any other facet of the sport, but the science is not in the individual shape, so much of it is the total aerofoil from the luff of the jib to the leach of the main and its application to any particular course on which the boat is sailing. Speed comes from sails which can

create this total aerofoil shape easily over a wide spectrum of wind strengths. Many will argue that the flow in this or that position is faster but with correct sheeting and various sheeting systems sails can be made to change their shape to suit different wind conditions to achieve the required position and depth of flow. It is most important to realise that the control of the slot is of primary importance. With the Mirror dinghy it is particularly difficult when sheeting to the standard position on the gunwale to achieve any form of parallel slot effect and therefore, we have been experimenting in bringing the fairleads further inboard in order to



obtain a more balanced slot. We are trying to aim at getting as near a parallel effect from the clew of the jib to the head along the line of the leach following the leeward side of the mainsail.

Well, you may say, so much for the theory. We all know the overall shape needed to make the boat go faster but how do we achieve this, that is the question. In fact, because the variables are so numerous, to give a complete answer would take far too long. Nevertheless there are some very fundamental rules that we, the Bruce Banks Racing Team, can pass on to you, which we feel would help. These are, if you like, the thick black lines of the picture, the shades and colours you will fill in for yourself.

**Foresails.** It is most important to realise that the function of the foresail is twofold, first as a component of the total aerofoil and second as an individual power unit. As the leading sail, the luff entry is very critical and it is important to realise that in smooth water a flatter luff entry is faster whilst in a chop a fuller luff entry is better. This is irrespective of wind speed. The big problem is to retain attachment of air flow to the leading edge. In smooth water the fine entry can keep the air flow attached as the boat is not being moved about, but in a chop the boat is always stopping and starting and therefore, a fuller entry is required to stop the air from being stalled. Perhaps surprisingly the fuller entry in fact points higher whilst the flatter entry is faster.

Please bear in mind the following points, depth of flow in the sail will move towards the edge under greatest tension therefore, sheeting control and halyard tension are critical; in light airs the sheet should be eased slightly. Halyard tension is obviously critical in both conditions and sufficient tension should be used to just stop the luff sail from distorting between the hanks. We would suggest that some form of graduation is put onto the halyard in order to keep some form of control over the amount of stretch used. The sail has to have a uniform angle of attack and therefore, we would suggest you fit four tell-tails on the luff approximately 6in. in, and you should obtain a situation where all of these tell-tails are moving at the same time. If the top tail flut-



ters first then the sheet leads must be moved forward. If at the bottom then the sheet leads must be moved aft. Correctly trimmed they will move like soldiers. We would then suggest that the top two and the bottom one were removed and therefore, you have only one tell-tail to look at.

For good speed it is essential that the tell-tails are streamlined aft on both sides of the sail, whilst beating it is permissible to allow the weather one to dance when the boat is being pinched, never let this happen to the leeward one, you will be throwing yards away.

**Mainsail.** Again the function of the sail is twofold, as the balance of the aerofoil and its individual power unit is different from the foresail in that its shape is more versatile and therefore to achieve the fastest speed the shape must be fully controlled in all con-



ditions. All controls of sail shape are integrated with one another and it is nonsense to use one in isolation. Remember the total aerofoil shape is what we are aiming for, the controls to use are (1) the foot outhaul, (2) luff tension, (3) kicking strap, (4) mainsheet. There is nothing like experimenting for yourself to work out the various effects of these controls, but here are a few rules to help. In light and medium winds it is important to hold the gaff as straight as possible except where you have sails which are very full cut, then we would advise that allowing the gaff to fall off slightly in the lightest winds will produce a far better sail shape than if the gaff is held straight. With the gaff held straight you will tend in fact to induce fullness at the front edge and however slack you have the luff it will be impossible for the flow to move aft, therefore, by artificially putting a bend in the mast you are letting the gaff sag, you will enable the boat to have a flatter sail which will be faster in the lighter winds. However, once there is a breeze around it is very definitely to your advantage to hold the gaff as straight as possible in order to develop the maximum power drive from a full sail. Luff tension should be adjusted to ensure the correct position horizontally of the depth of flow and the kicking strap should be used in order to obtain the right amount of twist to the leech of the mainsail. Finally the clew outhaul should be adjusted to determine the actual depth of camber created in the sail. Once all of these have been set and calibrated it is just a question of adjusting the mainsheet to set the sail for the particular course on which you are sailing. All the various adjustments have to be noted and remembered as you go along and so we normally supply to our customers some graduated sticker strips which make this very easy. Once the position is found and noted it is simply a matter to recreate the shape to order.

**Sail Battens.** A vast amount of research and production skill has gone into achieving the right style of glass fibre battens. There are many available on the market at the present time but we feel that our rod design has many advantages over some of the others. By merely rubbing with a simple abrasive paper it is possible to adjust the

camber and the bend of these battens to fair in with your sail without any interference to the general shape whatsoever. These battens are also very light and yet are stiff enough to control the leech if required.

**Spinnakers.** Spinnaker nylon is an inherently unstable and stretchy material. At Bruce Banks we have an incomparable understanding of these problems and for many years the loft has led in design not only in this country but in the world. The big problem is to control the distortion in the best possible way in order to produce a nice fair shape. It should be remembered that the control of unstable fabric is what seams and shaping is all about. Your spinnaker should be trimmed with the leading edge on a permanent verge of collapse, the old pretence that a spinnaker should always be full whilst pretty in pictures is slow in speed. The boat is constantly pitching and changing course and by keeping the front edge collapsed attached air flow is assured with a wide slot. A wide slot means less drag and more power. The degree of collapse on the luff is open to personal taste but we advise people to aim at a fold on the luff of approximately half the length of the luff and a depth of 4-5 in. If the sail is only collapsing the upper third of the luff then your spinnaker pole is too high and should be lowered. If however, more than half the luff is folding in then the pole is too low and it should be raised slightly. The position of the pole relative on the mast is something which a small amount of adjustment on the outboard end overcomes any amount of adjustment at the inboard end and so therefore, we advise that you take your normal standard position for this. With regard to the sheeting point, probably a foot or eighteen inches in front of the transom would give the best point for sheeting, so therefore, remember the following rules. Hoist the spinnaker to its maximum height, trim the sail by just collapsing the luff, adjust the pole height to achieve the correct amount of luff-break.

We hope that the above is of interest and will help some of the Mirror sailors with increasing their boat speed. If at any time there are any further points which people would like to discuss with us we would be quite happy for them to contact us.



# Racing single handed

by Bill Webber

Many people think that single-handed sailing cannot be as rewarding as sailing with a crew, as there is not the satisfaction of teamwork involved. However, there is in fact great satisfaction in teaching yourself how to do a job normally done by two. For this, some practice is needed, and maybe some small modifications (all in class of course) to your Mirror, which will also be of use when sailing two up. These modifications, plus some description of the techniques I have developed, are described below.

Done well, single-handed sailing is really quite simple and safe. Also, there being less weight in the boat and with perfect co-ordination between the helmsman and himself, the boat's handicap could be reduced fairly to the Association Committee's recommendation of PYR 118 — but not to the RYA's suggested figure of 113!

## Boat Modifications

Well adjusted toe-straps are essential to successful single-handed sailing in a blow. They should be positioned so that you can sit well out, comfortably, close up behind the thwart. Also of use for sitting out, is the maximum length of tiller extension with a universal joint coupling on the very end of the tiller. The best length is such that the extension does not quite foul the main-sheet when swung back along the tiller.

Furthermore, good free-running jib-sheets and fairleads are needed, with efficient, easily used cleats.

## Heavy Weather Techniques

— To be able to sit out well for long periods is an advantage. To help me do this, I first hold the main-sheet across my body and then hook it under my hand on the tiller. In this way, when the wind is constant, I have a hand free to hold on to the gunwale. When the wind gusts I let the mainsheet slip, and let go of the gunwale for short periods to pull the sheet back in. As in any sailing, it is essential to keep the boat upright even if it means spilling wind from the main.

In sitting-out weather, tacking is very easy and quick. If you are on starboard and going to tack on to port, the best method is to uncleat the jib and hold the tiller and both sheets in the left hand. Then take hold of the sheet on the starboard jib fairlead and tack in the normal way, bringing the jib-sheet behind your back as you move across. When the jib is fully in you must be able to cleat it without looking. Then take the tiller in your right hand, keeping hold of the mainsheet in your left until correctly trimmed. Other techniques may be easier for you, but they must be practised until they work every time.

When reaching, optimum speed is only obtained if the jib is continually played to the wind. To do this the tiller and mainsheet must be held in the same hand, leaving the other hand for the jib-sheet.

## Light Weather

In light airs, sailing single-handed is harder than sailing crewed. To keep the boat correctly balanced some interesting positions are often taken up. The position I most commonly adopt on beats and close reaches is lying across the thwart with my head resting on the windward gunwale. From here I can see both sails, the racing flag and other boats in most directions.

Whichever position you sit or lie in, it is important to be able to move quickly, as it only needs a small gust to capsize a boat with the helmsman trapped somewhere to leeward.

## Spinnaker Handling

I have not yet mentioned the use of the spinnaker whilst single-handing. Once up it is easy to control, but hoisting, and especially lowering, are difficult and will lose you much ground when racing — too much, if sailing on inland water, to balance the advantage gained.

The way to use a spinnaker is described below, and is much easier if a chute is fitted.

A piece of elastic across the boat which can be hooked on to the tiller is needed, because, however the spinnaker is used, you will have to let go of the tiller for a short while, steering with the trim of the boat, if the boat is heeled to windward it will bear off, and vice-versa.

To put up the spinnaker the pole should be clipped to the guy, the uphaul and then



the mast. When this is done the sail should be hoisted, after which it can be controlled in your normal way.

To lower the spinnaker is usually more difficult. If you do not have a chute the pole must be removed first, then the spinnaker brought down to windward. With a chute, the pole can be left up until the spinnaker is stowed. **MUCH PRACTICE IS NEEDED FOR THESE OPERATIONS!**

Having got used to handling the boat, you still have a few other things to remember before racing. All the normal crew's jobs must be done, such as taking the course down and using the starting watch...and remember, when things go wrong, you have only yourself to blame!

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## Water, water everywhere

**Question-with answer by Richard Dalby**

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I'd welcome some comment on a problem I encountered at the Mumbles. When there was a pretty fair swell, and particularly when there was a force 4 or above with the swell. I shipped an enormous quantity of water during the beats. Not having self-bailers (yet) I had to detail my crew to bail all the way from the windward mark to the gybe mark: I've no jamming cleats so he couldn't bail during the beat, really; now, why didn't other people ship water also? Were they hitting the waves at a different angle, and if so, just when does one bear away, how far, and does one do so for every single wave, or just look out for the white ones? Or was it my own boat's trim do you think? Were we sitting too far forward? I don't think so myself; I seem to remember that a lot of water came aboard past the shrouds rather than at the bow.

*Peter Moran*

Peter has raised two points — first the water over the bows; and second, the water over the side.

The first essential to realise is that once water gets in, it immediately deadens the boat, making her much less responsive, and so the next dollop comes aboard all the more easily.

On a windy day it is very easy to get water aboard before the start. The frequent changes of course (why is the other fellow always on Starboard?) and the disturbed water anyway, all lead to water splashing aboard. Around the ten minute gun, I always try to pull clear of the Piccadilly Circus area and then bail out to the point of sponging dry, and then jog along until the start. This may seem trivial, but boat speed in the first 50 yards is absolutely vital to pull into clear wind which will then stand you in good stead for the rest of the race.

When I used to sail with my elder son Adrian, we were somewhat heavy and we had a lot of trouble with water coming over the bow. Often we did not reach the windward mark before we had the choice of stopping to bail out or conducting an immersion buoyancy test on the spot. I thought that sailing with my younger children, Claire or Simon, would ease the problem. It did to a degree, but still far too much was coming aboard, and so we developed the following technique which seems to work reasonably well.

We sit fairly well aft, but lean forward as well. Then, as a wave approaches, so we lean back sharply. This lifts the bow, and so the wave hits the sharp underside of the hull, and passes by harmlessly. It needs a lot of practise to get the timing right.

If you do it too soon, the boat stops dead. If you do it too late, you've wasted your time! But, get it right and not only does the water stay out, but the boat seems to leap up to windward, probably due to the action of the wave on the underside of the hull — a very handsome bonus indeed! (We have often read about this sort of thing off the wind, but never in going to windward).

As to whether one should sail free, this must depend entirely on crew weight. I like to sail the boat slightly free to keep maximum speed. This is easier anyway; avoids the risk of stalling, and is the only way I can use my weight to advantage. It also means that there is an element of being able to luff up a degree or two into the really nasty waves and still keep the sails full.

However, if you haven't got the weight, then it is important to sail as close as possible all the time to avoid being blown over. Certainly, you must watch the water some



10 yards on the windward bow for that really nasty curling wave when the only way is to luff up into it and hope. Never, ever, bear away as this will only turn the boat sideways on to the wave, and lead to certain swamping.

As for the second point of water coming over the side, this is probably due to the boat being allowed to heel too much. I have always thought that the Mirror dagger board is at least a foot too short and hate to think of the loss of what little resistance it has if it is not absolutely upright in the water. Hence I believe another fundamental is to keep the boat absolutely upright.

This means constant adjustment to the mainsheet. Rather than constantly pulling it in and letting it out (very slow and tiring) I hitch the mainsheet around my hand with a running half hitch. Ask any Boy Scout what that means, or see me at the bar. Then by letting my arm slide backwards and forwards, the mainsail can be adjusted instantly, and it can still be let go in a flash if there is a really heavy puff.

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## Plain sailing

by Peter Thomas

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Nothing will convince me that there aren't a handful of *them* and about 50,000 of *us*. By *them*, of course, I mean these jokers who are round the bar, dry, changed, and working out where to put the cup in the old glass fronted cupboard, when you and I are struggling up the slipway after an exhausting final effort to snatch 34th place. We all read the expert articles and learned textbooks promising instant success, but to no avail. I wouldn't say we are slow to catch on, although I freely admit the reason we are always allotted so much space in changing rooms, I only now realise, is due to my crew's unfortunate habit of covering himself with his wife's perfumed talc, prior to donning his unlined wet-suit.

I particularly like the twee little diagrams, beloved of serious volumes, showing eddies of wind curling coyly round clumps of trees and tall buildings, and their probable effect on the unwary. We have three blackthorn bushes in one corner of our gravel pit that so

upset the ozone that you can tack through 200 degrees and be head to wind throughout the manoeuvre, yet the dirty great gravel-crushing mill offers as much cover from the Gloucester Monsoon as a polythene kilt. The other, more frequent diagrams showing which boat has right of way in various situations are a riot. In the middle of the fleet, the mass arrival at the buoy from all points of the compass produces anything from "If you touch me I'll scream!" to instructions in broad West Country combining sex and travel. The confident dead-pan shouts of 'Starboard' are too often bluffs which would do credit to any Hollywood horse-opera poker game. My crew, a worthy exponent of this, was drawing my attention to such a successful move in our last race, only to have us rammed by a non-competing boat which I swear was materialised by an alien power. We haven't felt so foolish since we helpfully launched an Enterprise with the drain corks out. (We tell the curious that the notches in our gunwales are being left in as footholds for when the Class adopts the Trapeze, and put on our Forward Thinker look).

Spinnakers, well what can you say, all the experts tell you how to get them up and down in split seconds. The only time mine has come in that fast was when it was recently draped over the washing line drying after one of its frequent immersions, together with the rest of the wash, when next door fired up a bonfire large enough to signal the Second Coming and threatened to reduce it to a molten, sticky mass of Terylene. With the speed of light we got the sail in, but the wife's Living Bra perished. Curiously, these articles never tell you useful stuff, like how to get the thing back in the chute from its position under the keel, or plastered on the shrouds. One of the neatest rollers for this that I have seen consisted of a towel rail revolving around a pair of toilet seat pivots, the latter being replaced by a chute with an entry cut from a baby's potty. The inventor, who is in the building trade, expressed the desire to keep everything simple and bog-standard. One of our fleet rivals is thinking of equipping his lady crew with a quiver of spinnaker poles so that he doesn't have to keep circling back to pick up his present lone example when she gets a touch of her William Tells with the down-



haul elastic. He's another bloke who seems to have a lot of space given him.

Crews, must be careful here, are a problem in themselves. Not moving in a society blessed by independent means, synchronising your free time on a week-end can be frustrating. Happy the man who has a choice of several and can get on with all of them. Our fleet captain feels his crew is the better for water cooling, and immerses the whole shooting match regularly. In a recent event, after a preliminary two capsizes he decided to quit while he was ahead, and made for shore only to lose the crew on the way. Arriving at the jetty roaring "Where are you?" — all that could be seen was the mute appeal of a pair of staring eyes flanked by two white pairs of knuckles hooked over the transom. The too helpful crew can be a drag. On one epic occasion we were actually leading an all-Mirror race somewhat uneasily. It was one of those classic scenes, you know "I don't like it, it's too quiet, we ain't seen an Indian all day" when twanggg, up shows the expert. "How many more laps is it?" says he. "This is the last" says the crew before I strangle him. "That's never right is it?" says he, and promptly bombs off over the horizon.

Planing, the ultimate in my humble view, is a state of grace only to be reached inland in a Mirror, when the wind gets up, the sky is as black as a yard down a cow's throat, and anybody with any sense is banging in more tent pegs on the boat cover and headed for the bar. Then the boat comes into it's own, screaming up and down in front of a Clubhouse full of un-usable plastic gin-palace owners. The final insult is if you can manage single handed, with your head in your bow wave, and no fear of hitting anything, as 98% of the boats have hauled out, but beware the exhuberance of your own velocity. I got caught last time, and ploughed a furrow up the slipway that would have won rosettes at the Bath and West Show. And when you make your wet but happy entry to the warmth of the Clubhouse, are you greeted with cries of honest admiration? No! at best it's "If the Good Lord intended boats that tiny to go that fast, He'd have issued them with proper pointed bows!"

You just cannot win! — which I think is where we all came in.

## Wasser Bitte

by Harry Taylor

Those attending the International Championships may find it desirable to equip themselves with a few nautical phrases, so that they can converse, in their own tongues with our continental friends. Here is a short glossary of German terms which will cover some of the more common situations.

*Officer of the Day* — Der Oberfuhrer der tag mit kapund schoutentube.

*Five minute signal* — Die funf minuten bangen.

*General recall signal* — Die vaserhellvasdas earschplitten bangen.

*Committee boat* — Die grosseboot mit lotza phlags und bangenwerks.

*Oilskins* — Der neinkaltwasseringangen klobber

*Tiller* — Die puschenpuller shtik fur vich-vay gangen.

*Helmsman* — Der dumkopf mit puschenpuller shtik vas ist alles schouten und schreamen.

*Mainsail* — Das grosserflapper.

*Boom* — Der grosserflapper bonzschplitten shtik.

*Capsize* — Der boot ist kaput und der alles dumkopfs gangen schwimmin.

*I have an overlap* — Wasser bitte.

*Starboard!* — Getderhell ausser der Strasse.

*Launching Trolley* — Das boot ingangen in wasser wagen.

*Dagger Board* — Die schingleschraper und bottumpinscher.

*Buoyancy tanks* — Der nein unterseebootwerks.

*Outboard engine* — Der spitzenpoppen seebootpuscher.

*Emergency repairs* — Fablonschticken mit hopinundprayen

*Kicking strap* — Der Herrparten und Earrippen Kord.

*First Dog Watch* — Eine tikundtok hund.

*I am aground* — Donner und Blitzen ver vas der wasser gangen.

*Lightweight Crew* — Klein Kinder mitaus Kilos.











# 20 Questions on the Racing Rules

by Deborah Evelyn

I think we all realise that it is very difficult to understand the rules at first. It is partly the sheer concentration needed, because every word matters, and partly the fact that it is difficult to think of all the instances where the rules apply.

This article is designed to set you thinking about the rules and their application, by posing questions (the answers are also given but on other pages). However, first of all you should read the rules. Nos. 31 to 68 are the most important, and also pay particular attention to Part 1 Definitions. Do not worry if you cannot remember them, just as long as you understand basically what each rule is saying.

I hope the notes with the answers and the reference to the relevant rules will be sufficient. But if not, and your local sea lawyer/rule shark cannot help, don't hesitate to contact me although I cannot promise to answer anything immediately. But *contact me, not Sally* — she is very busy as it is (my address is in the Yearbook as a measurer). If you think I have got something wrong please let me know, it is quite likely; after all we are all amateurs at this game!

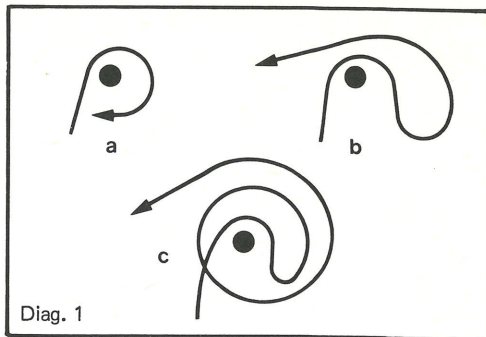
If you want to score yourself, keep a note of the number of wrong answers you choose which are marked D or R in the margin. D stands for a disqualification and R for a retirement, which would not have been necessary if you had known the rules. Not all the questions are marked in this way. The top score is, of course, zero D's and zero R's.

Have you read the rules? If so, you can start doing the questions. Don't hesitate to refer to the rule book. You might also find a pencil and paper handy. The answers follow on after the questions.

## QUESTION 1

The course specifies marks to port but by mistake A leaves one to starboard. What should he do now?

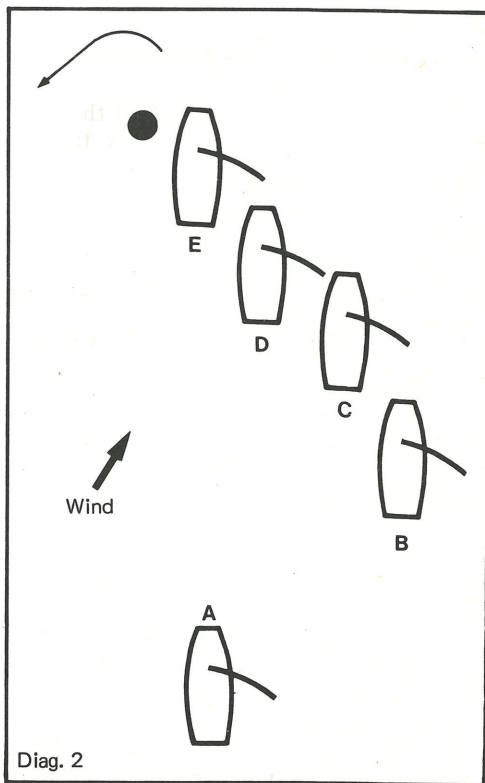
- (a) Sail on (see Diagram 1a)
- (b) Turn around and go back leaving the



Diag. 1

mark to port and sail on (see Diagram 1b)

- (c) Turn around and go back leaving the mark to port and then round it again leaving the mark to port and sail on (see Diagram 1c)



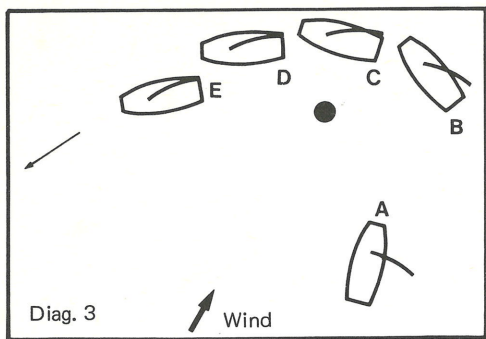
Diag. 2

## QUESTION 2

(See Diagram 2). How many boats does B have to give water to at the mark?

- (a) 0 (b) 1 (c) 2 (d) 3 (e) 4





taking all A's wind so B is catching up on A. B cannot luff up to windward because of the anchored vessel and she cannot go to leeward of A without gybing, which will result in a capsize because it is blowing force 5! B hits A on the transom.

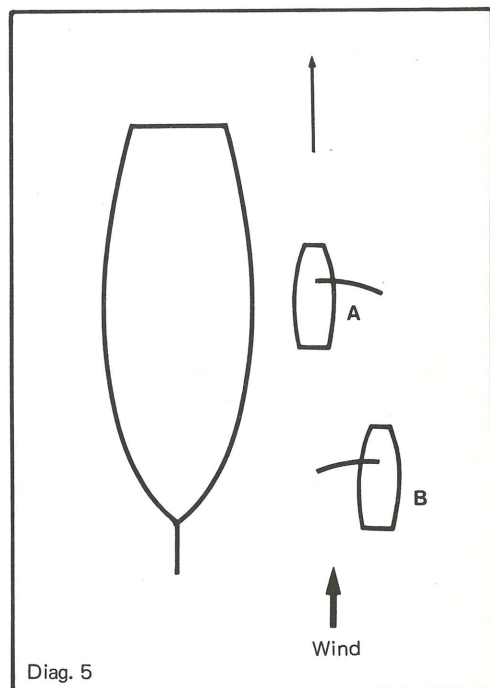
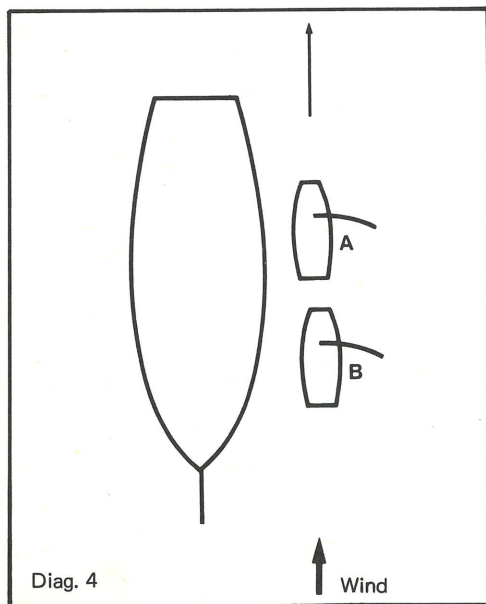
What should B do? (see Diagram 4).

- (a) Sail on.
- (b) Retire.
- (c) Protest.

### QUESTION 3

Following on from Question 2, the boats are now in this position (see Diagram 3). What should A do?

- (a) Pass under B's stern and then assume the course for the next mark even though this means taking the mark wide.
- (b) Cut in close round the mark inside B and improve his position.
- (c) Slow up so that B can round the mark first and then take the mark tight in their wake.



### QUESTION 5

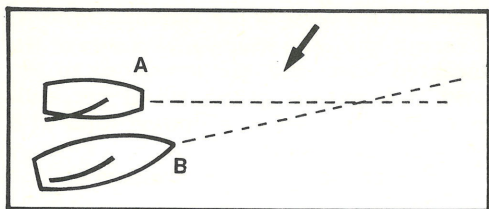
The windward mark must be left to starboard. A is approaching it on port and B on starboard. They are on a collision course. What should B do?

- (a) Bear off and pass under A's stern.
- (b) Call 'Starboard' to A and immediately tack onto port to round the mark.
- (c) Call 'Starboard' to A and when he has crossed A's original track, tack onto port.
- (d) Tack onto port to leeward of A and call for water despite the fact that they are both clearly within two boats' length of the mark.
- (e) Realise your position is hopeless and retire.

### QUESTION 4

A and B are running on port and passing a large anchored vessel. B is just astern of A. Unfortunately B is directly upwind of A and

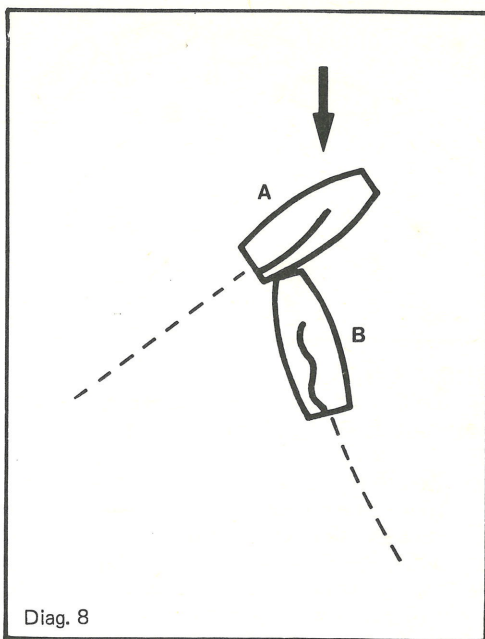
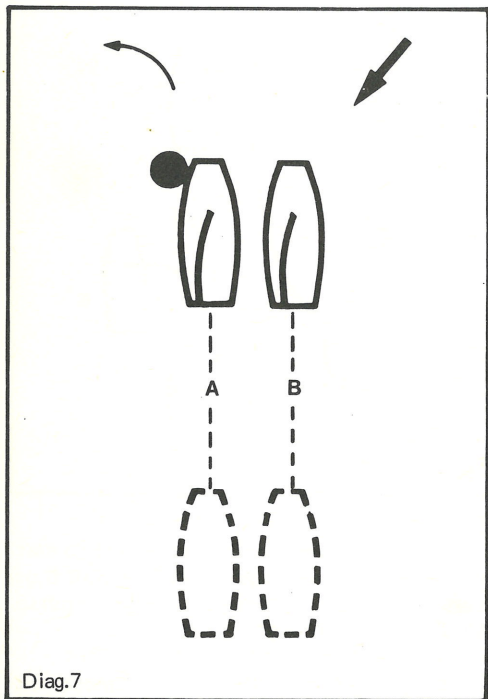




#### QUESTION 6

A is a Mirror sailing a close hauled course. B is a bigger, faster boat which can also point higher. What should A do? (see Diagram 6).

- Tack.
- Luff up to keep clear.
- Hail B 'Mast Abeam' and force her to bear off.

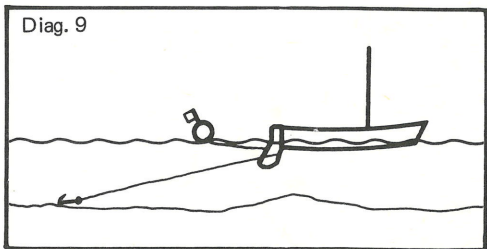


Diag. 8

#### QUESTION 8

A is on port tack and crossing clear ahead of B on starboard tack when suddenly B luffs up and hits A; B tells A to retire because A was on port (see Diagram 8). What should A do?

- Sail on.
- Sail on and protest.
- Retire.
- Retire and protest.



Diag. 9

#### QUESTION 7

(See Diagram 7). A calls for water from B but is not given enough and hits the mark. However there is no collision. What should A do?

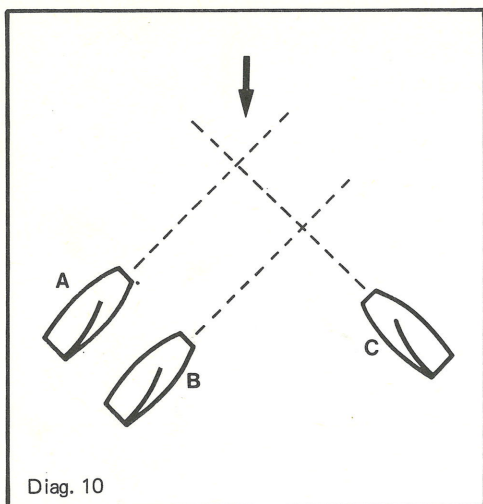
- Sail on.
- Protest B.
- Re-round the mark and protest B.
- Re-round the mark and sail on.

#### QUESTION 9

(See Diagram 9). A rounds the mark and catches his rudder on the anchor warp. He lifts his rudder blade and he is free. What should A do now?

- Retire.
- Sail on.
- Re-round the mark in accordance with Rule 52.2.





### QUESTION 10

A and B are on collision course with C (See Diagram 10). What can B do?

- Tack.
  - Bear off and go behind C remembering to leave enough room for A to do the same if he so chooses.
  - Hail for room to tack and if it is given, tack.
  - Hail for room to tack and retire immediately.
  - Bear off and go behind C but tell A he has no right to water between C and B.
- N.B. Do question 11 before looking at the answers as the two questions are related.

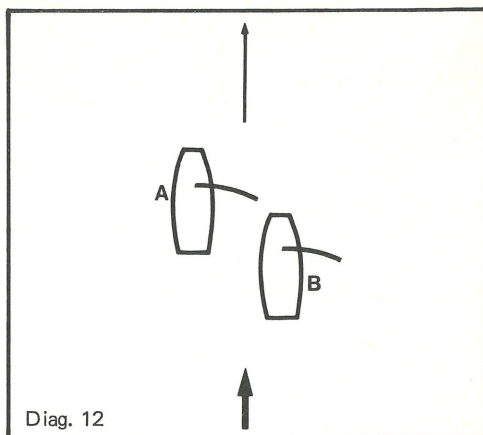
### QUESTION 11

If in Question 10 only B was on collision course with C and A can clear C, what can B do?

- Tack.
- Bear off and go behind C remembering to leave enough room for A to do the same if he so chooses.
- Hail for room to tack and, if it is given, tack.
- Hail for room to tack and retire immediately.
- Bear off and go behind C but tell A he has no right to water between C and B.

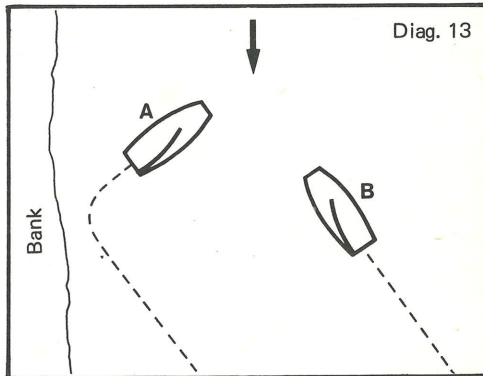
### QUESTION 12

B is overtaking A to leeward on a run. When B first establishes an overlap A calls 'Mast Abeam' to prevent B from luffing. If



B wants to luff what must he do? (see, Diagram 12).

- Nothing. B is not allowed to luff A under any circumstances.
- B must draw clear ahead.
- B must drop clear astern.
- B must move away two boats' lengths to leeward of A.
- B must draw level with A.
- B must gybe twice.

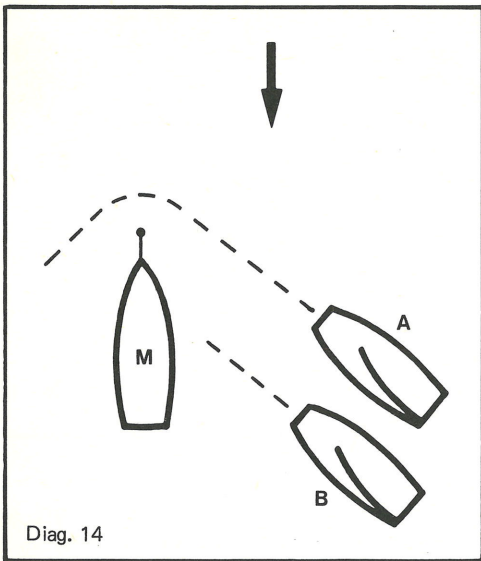


### QUESTION 13

A and B are beating up a river (see Diagram 13). A is sailing on starboard but soon reaches the bank and has to tack onto port. A then sees B approaching on starboard, they are on collision course. What should A do?

- Call for water because of the proximity of the bank.
- Immediately tack onto starboard and then call for water to tack because of the proximity of the bank.





#### QUESTION 14

(See Diagram 14). M is a mark of the course, a large boat at anchor. A can lay the mark but B will have to tack to get round it. What should B do?

- Hail A for room to tack and tack when it is given.
- Keep clear of A altogether.
- Hail A for room because it is impossible to keep clear and then retire.

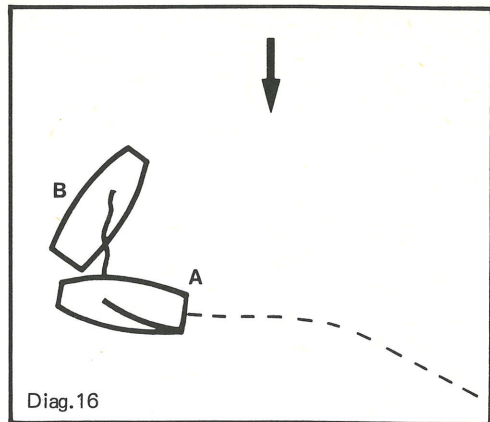
#### QUESTION 15

Let us suppose in the case above that B calls for water and A quite rightly, refuses. However, then the wind suddenly heads A and A cannot lay the mark. What should A do?

- Tack and then tack back again and round the mark.
- Gybe and round the mark after B (we can assume that B had managed to keep clear of A and M until now).
- Retire.

#### QUESTION 16

During the beat the helmsman of B notices that his shoe lace is undone and he is in danger of tripping over it so he lets the sails flap and bends down to tie it. He does not see A approach. A has to bear off to pass under B's stern but as he is going close past B's boom, which is flapping about, knocks

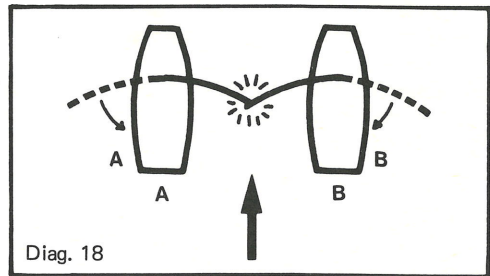


the helmsman of A on the head (see Diagram 16). What should B do?

- Finish tying his shoelace and sail on.
- Retire.
- Protest.

#### QUESTION 17

When does a port-tack yacht *not* have to keep clear of a starboard tack yacht? (CLUE – you should be able to think of four separate instances).



#### QUESTION 18

A and B gybe simultaneously and there is a collision (see Diagram 18). Who should have kept clear?

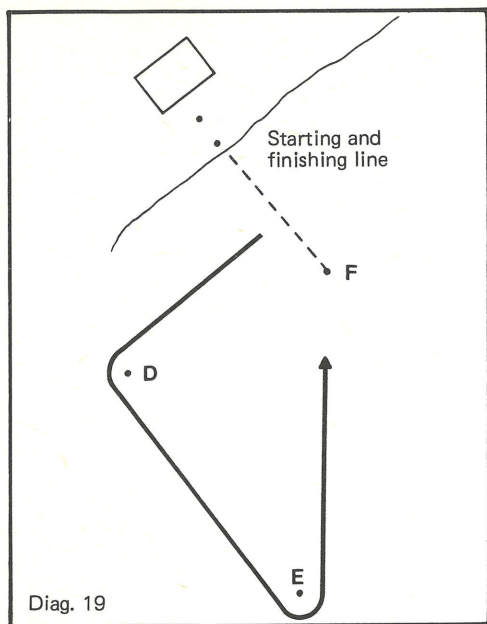
- A
- B

#### QUESTION 19

(See Diagram 19). The course board says D (to port), E (to port), F (to port) – 3 laps. At the end of the third lap do you:-

- Leave F to port and cross the finishing line.
- Leave F to starboard and cross the finishing line.





Diag. 19

- (c) Do both, i.e. cross the line one way and then go back round the outside of the finishing mark and across the line the other way.
- (d) Follow the boat in front.

### QUESTION 20

It is a quiet day on the river. All the boats in the race have resigned themselves to making little or no progress until the tide turns. As the wind drops they start to go backwards.

A is the only one who has an anchor so he drops this over the side. B discovers his bucket contains a plastic bag full of pebbles (the family were at the seaside last weekend) so he ties that onto the end of a rope and drops it over the side. C makes his crew stand up to his waist in water holding onto the boat. D lets his crew go swimming to pass the time of day. E lets his boat ground gently on a sand bank and both of the crew wade ashore and go and have a pint in the nearby pub, returning within half an hour. F's crew is bored and cold so he lets him go home and takes his little brother as crew instead. G ties up to an old fence post with the boat still afloat. Who should retire for infringing the Racing Rules? (a) A (b) B (c) C (d) D (e) E (f) F (g) G.

## TWENTY QUESTIONS ON THE RULES

### ANSWERS

N.B. Some clubs now allow alternative penalties (e.g. 720 degree turns) instead of retirement. Therefore wherever in an answer there is a reference to retirement, this may include the possibility of accepting a penalty instead.

#### ANSWER 1

- D (a) Wrong
- D (b) Wrong
- (c) Correct. See Rule 51.2.

#### ANSWER 2

- D (a) Wrong.
- D (b) Wrong.
- D (c) Wrong.
- (d) Correct. B must give water to C, D & E but not A who is clear astern. See Rule 42.1 & Definitions OVERLAP.
- (e) Wrong.

#### ANSWER 3

- (a) Safe, but you could lose some places by taking the mark wide if there are other boats close behind.
- (b) Dangerous, if you touch B or C you can be disqualified under Rule 42.1(b)(i).
- (c) Probably the best way if you can slow up enough. See Rule 42.1(b).

#### ANSWER 4

- D (a) Wrong.
- (b) Correct. Because B should keep clear. Rule 37.2.
- D (c) Wrong. B will be disqualified. It is no good pleading that there was nothing else you could do. You must anticipate situations like this, B really should have gone the other side of the anchored vessel. See Rule 37.2.

#### ANSWER 5

- (a) Coward! You could get round the mark ahead of A and C if you did as suggested in answer (d).
- (b) There is nothing in the rules to stop



you doing this but I would not recommend it for two reasons. Firstly, the next time you call starboard they won't believe you. Secondly, if A, as a result of your hail, starts to bear off to go behind you he may not be able to avoid you if you immediately tack. So you would be disqualified under Rule 34.

- (c) You could do this, but you would probably let C through since you would have overstood the mark. Much better to do (d).

- (d) This is the correct procedure provided you can clear the mark on port. Rule 42.2(b) allows you to call for water in this case.

- R (e) Unnecessary, (d) is the preferred strategy if there is room to tack beneath A and still lay the mark. If you hit A whilst tacking however, you must retire (Rule 41.1). If you hit the mark you can re-round it. If A forces you onto the mark you really must try and arrange to hit A and the mark simultaneously. Otherwise you may find it difficult to prove that it was his fault when it comes to the protest hearing.

#### ANSWER 6

- (a) Correct.
- (b) Correct.

- D (c) Wrong. B is not sailing above *her* proper course, see Rule 38.1. A, as the windward boat, must keep clear, see Rule 37.1.

#### ANSWER 7

- D (a) Wrong.
- (b) Correct.
- (c) Correct and very wise because even if you cannot prove that it was B's fault that you went on the mark, you cannot be disqualified since you have corrected yourself. However, it is not worth doing this if there are other boats close behind because you may lose places.
- (d) Safe but cowardly! You ought not to let B get off so lightly – you should protest. The principle of the Racing Rules is that each individual

is responsible for enforcing them. If you do not protest when there has been an infringement of the rules you are encouraging a lax attitude towards the rules at your club. This is particularly bad when you are sailing with young helmsmen. They must not get the impression that some rules have to be obeyed and others do not. The rule that applies in this case is 42.1(a)(i). Incidentally, if there had been a collision between A and B, A must protest under Rule 67.1 or retire.

#### ANSWER 8

- D (a) Wrong, there has been a collision, therefore A must retire or protest, see Rule 67.1.

- (b) Correct, B is in the wrong under Rule 34. B should not have luffed up. This is why the best acknowledgement of a hail of 'Starboard' is to hail 'Hold Your Course'.

- R (c) Wrong, you should protest. If you can prove that B luffed up B will be disqualified.

- R (d) Wrong, you should sail on and protest. However, there is nothing to stop a boat which has retired from protesting. But you cannot wait until you have got ashore and read up the rules before you decide to protest. A protest flag must be flown at 'the first reasonable opportunity', Rule 68.3(a). The only exception is where a yacht has no knowledge of the facts justifying a protest until after she has finished. Rule 68.3(b). For example, if you thought that the other yacht was going to accept a penalty but, when you came ashore you found out that she had not, then you could (and in some cases, must) protest.

#### ANSWER 9

- R (a) Wrong. A has done nothing wrong.
- (b) Correct.
- (c) Unnecessary, unless in freeing himself A pulls the mark towards himself and touches it. See Definitions MARK.



# ANSWER 10

- D (a) Wrong, if you tack without hailing A you will hit her.  
 (b) Correct.  
 (c) Correct.  
 R (d) Wrong, there is no need to retire.  
 D (e) Wrong. A has right to water between B and C.  
 N.B. Answers (b) and (c) are equally correct and in this situation B can choose between the two. A cannot force her to do one or the other. See Rules 43.1 & 42.1 and Definitions OBSTRUCTION.

# ANSWER 11

If only B is on collision course it makes no difference to the answers, they are the same as in Question 10. It is up to A to decide if he can pass safely ahead of C. If he chooses to go behind C he can ask for water.

Again, although I have not asked a question on it, if A only is on collision course and B can pass under C's stern without having to bear away, she must bear away and give room to A to pass under C's stern if A so chooses. See Rules 43.1 and 42.1 and Definitions OBSTRUCTION.

# ANSWER 12

- (a) Wrong.  
 (b) Correct, if B draws clear ahead she breaks the overlap and Rule 38.1 does not apply.  
 (c) If B drops clear astern the overlap is broken but as soon as a new overlap is established B will be in the 'mast abeam' position again and no better off. So this answer is wrong.  
 (d) Correct. If B moves two boats' lengths away to leeward she breaks the overlap. If she can then establish a new overlap without dropping back into the 'mast abeam' position she may luff. See Rule 38.2.  
 (e) Wrong (this answer is a red herring).  
 (f) Correct, if B gybes she breaks the overlap. If she can establish a new overlap without dropping back into the 'mast abeam' position she may luff. See Rule 38.2.

# ANSWER 13

- D (a) Wrong.  
 (b) Correct. Rule 36 applies in this case. It is irrelevant where the boats are, whether they are near the shore or a mark either. Rule 36 applies (See Question 17 for the instances, they are very few, when Rule 36 does not apply). Rule 43.1 allows the inside of two boats on the *same* tack to call for water to tack away from an obstruction so the only correct answer is (b). Of course, what A should have done is checked how close B was before he tacked onto port. The moral is 'Look over your shoulder before you tack'.

# ANSWER 14

- D (a) Wrong.  
 (b) Correct.  
 R (c) Correct, but not a very happy outcome – you have to retire. You should have thought about what you were going to do before you got so close to the mark. See Rules 43.3(a) & (b).

# ANSWER 15

- D (a) Wrong.  
 D (b) Wrong (this answer is really a red herring).  
 (c) Correct, see Rule 43.3 (c).

# ANSWER 16

First, was there a collision? Yes, between B's boom and A's helmsman's head, this counts as a collision even though the boats themselves did not touch. Who was in the wrong? B, he was on port (see Rule 36 and Definitions ON A TACK). So:

- D (a) Wrong.  
 (b) Correct.  
 D (c) Wrong, you can try, but if you knew your rules you would know that the protest committee will disqualify you. So if you are going to tie your shoe lace tack onto starboard first!

# ANSWER 17

- (a) When returning to start (Rule 44.1).  
 (b) When re-rounding after touching a



mark (Rule 45.1).

- (c) Whilst doing 720 degree turns (see Appendix 3).
- (d) When an inside yacht on starboard will have to gybe round a mark to assume proper course to the next mark, she shall gybe at the first reasonable opportunity (see Rule 42.1 (a)(ii)).

N.B. It is not just port and starboard which do not apply, a yacht has no rights in these situations and must keep clear.

#### ANSWER 18

- (a) Correct (see Rule 41.4).

D (b) Wrong.

N.B. It is not often that two boats tack (or gybe) at exactly the same time. If one can prove that the other waited until he saw the other begin to tack (or gybe) then the case is altered and 41.1, 41.2 & 41.3 apply. For example, in this case if B gybed after A and hit A whilst gybing, B would be in the wrong under 41.1.

#### ANSWER 19

D (a) Wrong, this is known as a 'hook finish' but it is not a correct finish at all. The finishing line must be crossed from the direction of the course from the last mark (see Definitions FINISHING).

- (b) Correct.

(c) Correct, but you are very cautious. Also if you cross the wrong way first you may lose a place before you finish correctly.

D (d) Wrong! He is bound to do it wrong too!

#### ANSWER 20

R (a) A is quite correct (Rule 63)

R (b) B is quite correct (Rule 63)

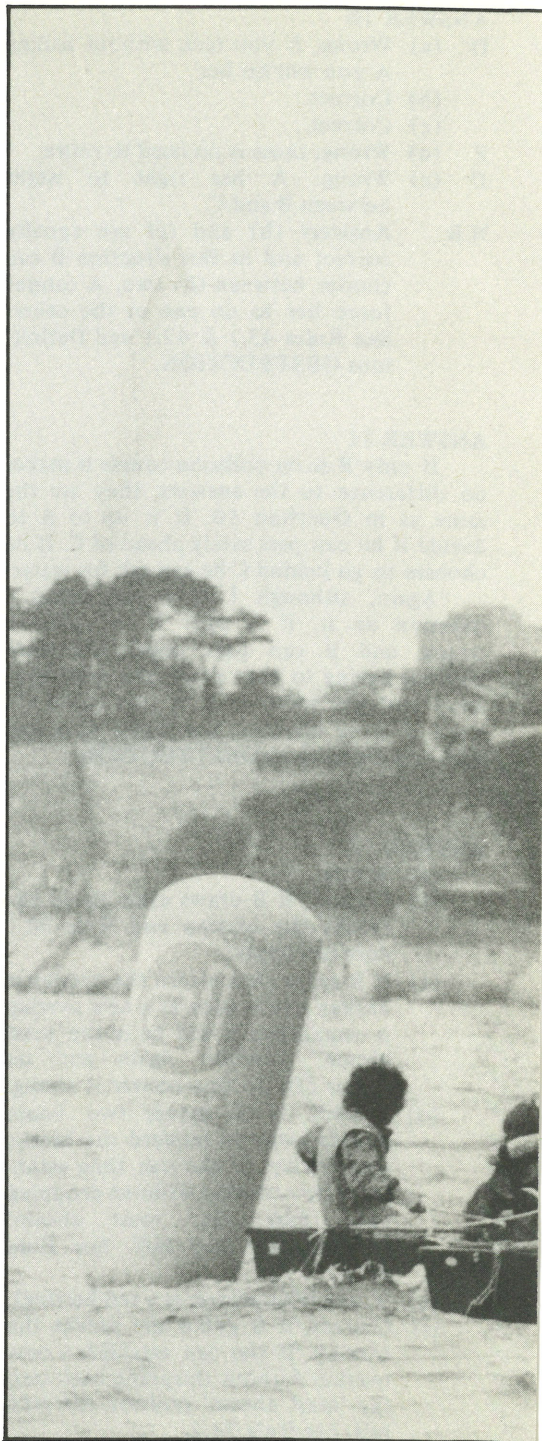
R (c) C is quite correct (Rule 63)

R (d) D is quite correct (Rule 57)

(e) E should retire, they must not leave the boat except as provided in Rule 57.

(f) F should retire (see Rule 57)

R (g) G should retire, he must not tie up (Rule 63.2)









# Rounding a mark

by George Gibson

When we first begin to race it is quite easy to know which way to go – follow the boat in front. Then there comes the exciting time when we are the boat in front (all the experts have gone to the National Championships) or the despairing time when we are so far behind that we have forgotten which way they went. By then we will have learned that a course is specified by stating the various marks in order and the side on which each has to be left. So all we have to remember is which are starboard hand marks and which are port hand ones. If the wind is kind to us we can follow a course round a mark such as that shown in diagram 1, tacking or gybing if necessary, and concentrate on sailing the next leg. But sometimes we misjudge the correct moment to tack or, in tidal waters or on a river, the current is stronger than expected, and we discover to our horror that we are passing the mark on the wrong side. In these circumstances we must make our course conform to the requirement of Rule 51.2 which is that a string representing our wake would, when drawn taut, lie on the required side of each mark. So we can follow the course shown in diagram 2 or that in diagram 3.

As our racing ability improves we sail closer and closer to the marks, and we have some company as we are rounding them instead of being Tail-end Charlie. Eventually the inevitable happens and one day we hit a mark. If we were 'wrongfully compelled by another yacht' to touch the mark the solution is obvious – protest. If the race committee decides that our protest was justified the other boat will be penalised in an appropriate manner and we, the innocent party, will suffer no penalty. More frequently we will realise that it was our own fault and that we stand no chance of persuading the committee that the blame rests with somebody else. In these circumstances the action laid down by the racing rules some time ago was to retire. The powers-that-be decided that this was rather a severe penalty for an incident that can readily occur during the heat

of racing and that does not interfere with any other yacht specifically. So they introduced a process by which a yacht could acknowledge her fault and be penalised but could continue in the race.

The process is specified in Rule 52.2 which states that a yacht 'may exonerate herself by completing one entire rounding of the mark, leaving it on the required side, and thereafter she shall re-round it or re-pass it, without touching it'. Obviously this is only possible when the mark is surrounded by navigable water – we are not allowed to climb out on the bank, drag our Mirror ashore, and re-launch it on the other side of the mark!

The rule is deceptively simple; there have been a number of cases taken to the



Diagram 1  
The ideal course

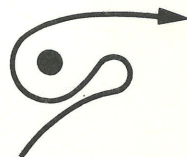


Diagram 2  
Passing on the wrong side



Diagram 3  
Passing on the wrong side – alternative course.

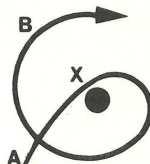


Diagram 4  
Single touch on the far side

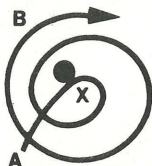


Diagram 5  
Single touch on the near side

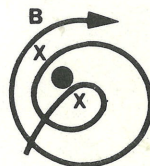


Diagram 6  
Playing dodgers?  
– Double touch



R.Y.A. Racing Rules Committee to clarify the interpretation for various situations. The simplest one is that shown in diagram 4 where the mark has been touched on the far side at the point marked X. The correct course thereafter is to complete the rounding to A in order to exonerate ourselves and then to re-round the mark. The process finishes at B where we are on the proper course to the next mark. Diagram 5 shows the next situation where the mark was touched on the near side. Comparing this with diagram 3 we see that the portion to A is completing the first rounding even although it seems, at first sight, to be more. Then we must re-round to the proper course to the next mark at B. If we are sufficiently unlucky to hit the mark twice the situation might be as shown in diagram 6 where we can see the application of the same process: 'complete the entire rounding' during which we touched, 're-round' without touching, and then go on a proper course to the next mark.

While we are going round in circles we must keep clear of these more skilful people who did not hit the mark. The critical point at which we can re-assert our rights, if there is anybody still in the vicinity, is that marked B on the diagrams where we are on a proper course to the next mark.

The course that we have to follow is enough to make a snake giddy so we will only carry it out when we touch the mark. It is therefore worthwhile knowing what is part of the mark and what we can touch with impunity. The flag and flagpole are considered as part of it but ground tackle and any object accidentally or temporarily attached are not. So it is quite permissible to plough through any weed that is trailing from the mark. Equally we need not worry if we catch the mooring rope, provided that we succeed in disentangling it before the mark is pulled against the side of the boat.

Those who wish to know the exact wording of the rules summarised above will find them in the 1973 Yacht Racing Rules. The definition of a mark is given in Part I; Rule 45 covers the period during which we must keep clear of other boats; Rules 51.2, 51.3 and 51.4 deal with rounding a mark; and Rule 52 is concerned with touching a mark.

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## Ask Aunty Harry

by Harry Taylor

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*In response to many requests Aunty Harry has agreed to give advice to help solve some of our readers' problems. Letters will be treated in confidence with maximum publicity to anyone wishing to bend the rules.*

Dear Aunty Harry,

I have recently purchased a new reaching spinnaker. It sets very nicely but my fiancée who crews for me complains that she is unable to find a suitable make-up which does not clash with its green and orange colour scheme.

Worried

*Dear Worried.*

*I think you know the answer already. A really good spinnaker is very hard to come by.*

---

Dear Aunty Harry,

My trouble is with the other members of my club. Whenever I come to a buoy I shout, 'Water at the mark,' like Paul Elvstrom advises, but they are all beastly and just laugh at me.

Blue Eyes

*Dear Blue Eyes,*

*I think you may have misunderstood Elvstrom's advice. It is not necessary for you to shout 'Water at the mark' when you are the only boat there. For other occasions, although it is fairly easy when you have an overlap, constant practice is required to develop a really forceful hail which will ensure room when you have not. One of our top helmsmen, who regularly frightens people away from ten yards or more, sets a small course on his lawn and practices on his dog.*

---

Dear Aunty Harry,

What is a shroud clipper and is it a permitted fitting on a Mirror dinghy?

Quester



Dear Quester,

*This shroud clipper is a spring loaded wire snip which is screwed to the end of the boom on the port side. When it is touched by the shroud of a boat on port tack, the cutter is released and automatic dismasting occurs, obviating the need for protest. The fitting is not, however, a permitted extra as it has been found that, during rigging, it is possible to accidentally snip one's own shrouds and halyards.*

Dear Aunty Harry,

I have a lot of difficulty getting a smooth finish on the bottom of my boat. Can you offer any hints?

Speedy G.

Dear Speedy G.

*You should first turn your boat upside down. If you have no helpers, this can easily be done with an ordinary Coles crane. If you do not happen to own one, the best procedure is as follows:*

*1. Lift the gunwale until the boat is resting on the other side.*

*2. Carefully adjust the angle of the boat until it just balances.*

*3. Run swiftly round to the other side of the boat and grasp the gunwale again before the boat crashes to the ground. (It is a good idea to do a few practice runs round the boat as speed is essential).*

*4. Very gently lower to the ground.*

*5. Carefully smooth the bottom, not neglecting to repair any damage which may have occurred in 3.*

Dear Jasper,

*I am afraid your query is not suitable for publication, and so, if you will send me a stamped and addressed envelope, I will write to you privately.*

*Meanwhile, it would be tactful of you not to mention to your clubmates what you have suggested to me. The object of tuning should be to make your boat faster and not to make those of all the other competitors slower.*

Dear Aunty Harry,

I have almost completed the building of my Mirror dinghy. When it is finished, and I

have had a little practice, I plan to take it on a round the world cruise (not non-stop of course). The rules on the fitting of toe-straps seem to me a little vague. Can you help me?

Globe Trotter

Dear Globe Trotter,

*Yes, I think you should fit toe-straps.*  
*Bon Voyage.*

## Winning

by John Taylor

*(5 times National Champion or runner-up  
Runner-up European Champion  
13 times Area Champion or runner-up)*

Winning is a frame of mind. If you know that you are going to win before the start, you may be disappointed at the finish. If you think that you will not win, you certainly won't.

Will you still be disappointed?

100% boat speed requires 100% concentration.





# REPAIRS AND MAINTENANCE

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## A new bottom

by Walter Maxfield

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Should you reach the stage where the bottom of your first love is rotten (your Mirror, of course) don't despair, all is not lost, as I will prove to you if you can follow my simple (?) instructions, although these only cover replacing the cockpit floor to within 1½in. (38mm) of the side tanks. First, of course, completely strip your boat of its spars and rigging and having done this carefully remove the fibreglass tape which seals the tanksides to the floor.

On no account disturb the tape inside the tanks, as this should remain intact since you cannot get at it. Next mark a line 1½in. (38mm) approx from the tank sides, all the way around the cockpit floor, and drill a series of holes approx 1/8in. (3mm) in diameter every 12 inches all round the line you have marked. Be sure and put a hole in each corner where the lines meet each other. Turn the boat over and leave it upside down. You will see the holes you have drilled from inside and can easily join them with a pencil line along a piece of timber to form a rectangle. This is the portion which you will be cutting out. Once you have made room in one corner to start, use a fine toothed saw, but don't cut yet! About 6 inches forward of the front cut, say 18 inches from the front end of the centreboard slot, cut the brass keelband and remove it completely up to about the middle of the skeg, or all of it if you wish, keeping it for later refixing, or renewal if required. Remove the screws which pass from the bottom into the centrecase. You are now ready to cut out the bottom.

First cut down each side (be careful not to cut the thwart) then cut across the front.

When you come to cut across the back, you will find that you have to cut clean through the skeg. Don't worry, *cut straight across!* Carefully remove the bottom from the centrecase, trying not to damage the case in any way. You should now be starting to get worried at the sight of your lovely Mirror with what appears to be a rather large self-bailer — well don't be! Carefully clean off the bottom of the centrecase so that it looks as it did when it was new, i.e. without glue or tape. You can now turn the boat the right way up and do the necessary cleaning off of all taped varnish, which remains around the bottom of all the tanks.

That concludes the preparation for the fixing of the new parts, which I will now describe.

You should cut two strips of ¼in. (6mm) or 3/16th (5mm) ply, 3in. (76mm) wide. These should be long enough to reach neatly from the stern tank to the stowage bulkhead, remembering to press them firmly on top of the 1½in (38mm) 'lip' which is left all around the tank sides. They should also be a reasonable fit along the edge of the side tanks. If they are not, fit them, using a sharp plane or saw. Be sure they do not obstruct the removal of the bungs which are in the tanks. You should now mix your glue.

If you have any small G clamps handy, these would be helpful in fastening the new piece to the old. Liberally apply the glue to the 1½in. (38mm) lip on one side of your boat. Offer up the appropriate 3in. (76mm) piece to where it should fit and clamp firmly in the centre. With a 1/16th drill make a line of holes approx 1 inch from the side tank. These holes should pass right through the two pieces of timber and should be about 4 inches apart, with, of course, one in each end. Using ½ inch No. 4 or 6 brass screws, you may now start to permanently fix the three inch piece to the 1½in. (38mm) lip.



You may put the screws in from inside or outside your boat, it doesn't matter as you will most likely have to file the points off anyway; also you won't need to countersink the screws as they should pull in quite easily, but do not 'over turn' your screws or they will not grip. When you have fixed your first piece satisfactorily, remove the G clamp and repeat on the other side of the boat. Now for the stern tank strip. As before cut a 3in. (76mm) strip, bend it down to the bottom and clamp it into place. This piece will fit in between the two new pieces at each side. Once you are satisfied with its fit, remove, glue liberally and then fix as before. We now move to the front of the cockpit. This portion should be done in two pieces since it would be quite a job for you to bend one piece right across. Proceed as before, after first fitting carefully.

Now turn your boat over.

You are now once again in the upside down position. You should have quite a nice 'landing' for your two new bottom panels.

Using ply of the same thickness as the bottom, fit one side to fit the existing bottom, its centre edge, by the way, should just come to the old centreline of the boat. But don't cut out for the centrecase yet. When you are satisfied that this first panel is a reasonable fit, remove it and apply glue as before, but this time you will, of course, include half the centrecase bottom in with the glueing. Clamp and screw the bottom to the lip — you will find that putting the screws in from the outside of the boat is best. Don't forget to use 1in. No. 8 brass screws to fasten the bottom to the centrecase. You can now mark the ends of the centreboard slot and cut this portion out completely if you wish. Cut out your second panel and carefully trim it to fit the other side, making sure that the centreline of the new bottom is a true 'keel line' over the centre of the plate case. Remove, apply glue and screw as before. Your bottom is now almost complete.

All that remains is for you to stitch along the centre seam with copper wire and turn the boat the right way up. File off any screws which protrude, and tape all the inside bottom edges of the cockpit, also the centre case, and centre seams. Turn the boat upside down once again, cut off the ends of

the wire, tape and resin the outside joints of the new bottom portion and centre seam. Your old floor boards and footrest can be removed or renewed as you wish, but make sure that you put them back 'in Class.' When you are satisfied with the inside of the cockpit, you can turn your attention to the piece of the skeg which is still missing after cutting out the old bottom. This should be refixed to join up neatly with the existing skeg, by using glue, tape and resin to fix it into place. You should also tape and resin along the whole length of the skeg, and finally fix the keelband.

If you paint the bottom of the boat and continually rub down between coats, there's no reason why your Mirror should not perform as well as, if not better than, it did before, but that's another story.

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## Name transfers

by Kevin Wilkinson

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Take some 3in. sellotape, or similar, paint the required name/design on the *sticky* side with enamel paint. To put transfer on the boat, allow paint to dry thoroughly, then soak the sellotape in lukewarm water. The transfer will slide off easily. Place on boat, cover with clear varnish, and you have a new name plate!

Use clear tape only, and handle with care!

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## Split seam

by David Howell

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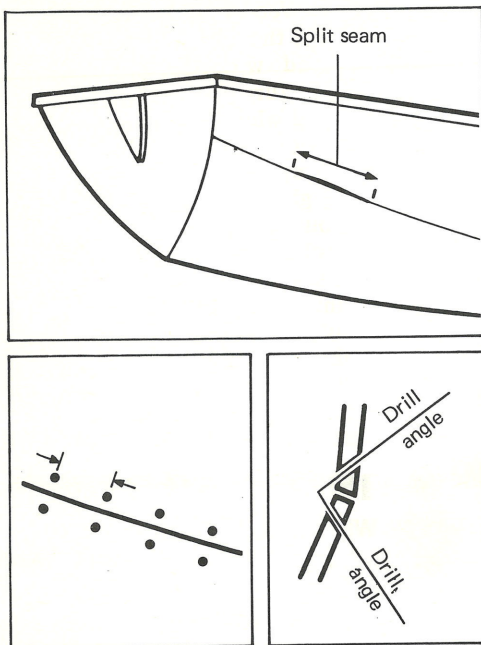
When building my Mirror, I listened to the advice of a friend . . . and applied as little resin as possible in order to have flexibility in the seams. The seam actually failed when beating in short sharp 4 foot waves, a common thing in heavy weather in the Severn Estuary. (I think *Lydney Y.C.* have the strongest tides in the country — any challengers?)

With one side of the seam inaccessible, I have found this method of repairing 100% successful (to date!) The difficulty is to repair it so that the joint will withstand forces pushing inwards on the panels, as the water



always does.

*Remove damaged tape and scrape off all resin, paint, varnish etc. in this area.*



1. Drill holes at 1½in. (38mm) centres for copper stitch wires. Angle drill to facilitate threading of wire.
2. Thread copper stitches and twist tightly with pliers, pulling together the ply panels.
3. Cut copper wire leaving 3 twists holding each wire.
4. Tap wire with hammer to set as close to the hull as possible.
5. Apply ample glass resin and 2 or 3 layers of tape to form a strong joint.

## Cool it man!

from 'Bucanneer'

Given a certain amount of warmth and affection, very satisfying results can be obtained by using glass fibre for repairs etc. and indeed for new construction. In most cases a fairly rapid set to the resin is desirable to prevent the glass fibre from springing away from its required shape and position,

and to achieve this a reasonably warm environment is necessary (we have found that 21°C (70°F) is about right). Unfortunately the resin in the jar you are holding in your 'ot sticky' and is also liable to be 'sent off' fairly rapidly.

To avoid suddenly finding yourself grasping a pot of solid matter, which, until a few minutes ago had been going nicely, thank you, try cooling the resin down by moving yesterday's leftovers and tomorrow's Sunday joint out of the fridge and leaving your can of resin in there for a couple of hours.

Having added the hardener, try working with your pot of 'goo' surrounded with ice cubes. All being well it shouldn't 'go off' below 13°C (55°F), so all the while you have ice, you can work at your usual steady pace instead of rushing round your boat like a maniac.

## Paint bubbles and loose screws

by Terry Cherrill

It is quite common to find along the bottom of the hull that the paint has bubbled or split in several places. The usual reason is that the clenched copper nails/brass screws fastening the cross rib and floor strips to the hull have 'worked' due to pressure from the crews' feet. Conventional stopping will break up and split paint film. If left untreated this will allow water to saturate the ply panels, leading to rot. Where this has occurred, gently chisel away the ply around the nail so that a small depression is formed with the nail standing slightly proud. Then fill the depression with fibre-glass resin (as used in the boat's construction). Leave to cure and rub back with 'wet & dry' used wet. When dry, prime and paint. The nail is set in the resin which is most unlikely to split during the life of the boat.

Heavy weather is also the cause of paint crazing. The large panels to the rear of the centreboard casing are, in the main, unsupported and flex violently. As a result the top layers of paint crack, giving a crazy paving effect which is rough to the touch. The solution is to rub the damaged paint back to



a sound surface with 220 grade 'wet & dry' used dry, prime if you get back to bare wood, and repaint as usual. This fault can re-occur after a period of rough use, so keep on examining the hull at regular intervals.

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## Paint stripper on resin

Question-with answer by Frank Webb

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I have a fairly old Mirror dinghy, and this year I thought I would clean the hull right down to the bare wood. The trouble is I am worried about using paint strippers anywhere near the fibreglass tape.

If the fibreglass tape is new, the strippers will tend to attack the resin and break down the bonding of the 'glass tape. However, when the boat is older, say two or three years, little or no effect is noticed. In cases where the paint has been applied very soon after the boat was built, it tends to affect the resin. On a second-hand boat, there is no way of knowing how soon paint was originally applied to the hull, so it is better to avoid all contact between the stripper and the 'glass tape.

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## Paint stripping without wrecked fibre-glass

by Peter Anderson

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This might interest people who are stripping down their boats for re-painting.

1. Using ordinary paint stripper, strip the paint off the boat up to the estimated area of resin and fibreglass (at the seams). I used Nitromors – the strong stuff in the yellow can! not the water rinsible in the green one. Clean off the paint, and wash over with spirit.
2. Start on the seams, and progressing a foot or two feet at a time, scrape off the paint using the stripper. As soon as this amount is done, wash over thoroughly with white

spirit. In this manner, a foot at a time, strip the paint off the fibreglass. The white spirit neutralises the action of the stripper and thus prevents the dissolving of the fibreglass. I have used this method to strip seven coats of paint off my Mirror Dinghy – when she was only five months built, and since then she has done many season's racing with no ill effects. I repeated the process more recently and with the same degree of success as before.

I would, however, like to emphasize the importance of taking care over stripping paint off the tape. If this is overdone to the extent of the removal of resin resulting in the lifting of the tape, I would suggest replacing the tape with a few layers of fine strand glass matting, cut to suit. This will safeguard against any cracks developing at the seams and joints.

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## Guide to boat painting

by International Yacht Paints

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Boat finishing isn't just a cover-up job. It's for *protection*. By bearing in mind some straightforward rules you can make your boat a winner and save yourself a lot of trouble later on in the season. To this end, International Yacht Paints have produced a practical booklet 'guide' giving you all the information you need. It's not just theory either. The emphasis is on doing it yourself with International's years of experience to back you.

### FOR EXAMPLE

When the surface has been sandpapered smooth, the question of removing the sanding-down dust must be tackled. The best way to do this is with a vacuum cleaner, which extracts the dust from the grain and leaves the surface dust-free. If a vacuum cleaner is not available a vigorous brushing along the grain will remove much of the dust which is lodged there.

### OR AGAIN

The Universal Clear Primer used as a first



coat is so made that it is comparatively slow drying and has ample time to soak well into the wood and seal it. It will appear reasonably dry after about 24 hours and is finally hardened off by the application of a first coat of Polyurethane. It is not necessary to wait 24 hours before the Polyurethane is applied; indeed, such a wait would be a disadvantage if there were any local dust or contamination in the air which could settle on the Universal Clear Primer and stick there.

#### *THERE IS A SECTION ON DRYING:*

To get a reasonable drying time it is essential to have both a degree of warmth and a free circulation of air. The evaporation of solvents from the paint and the oxidation of the varnish part of the paint are only properly achieved in freely circulating air. If, for instance, you are painting in a comparatively small garage with the doors closed, only a certain amount of evaporation and oxidation will take place. The air inside soon becomes overlaid with fumes since the air circulation is severely restricted. Under these conditions, paint will remain tacky until the air is changed and the processes of evaporation and oxidation are completed.

In addition to outlining processes involved, there are fully explanatory sections dealing with choice of material and degree of finish, types of abrasive, and grades of paper, a check list of paint faults and a specification and description of materials.

#### *ON VARNISHES*

Varnish should penetrate the timber — but some timbers are more easy to penetrate than others. Timbers with an oily nature are more resistant to penetration and have better anti-rot properties. The easiest way to assess penetration is to see how quickly and efficiently it absorbs a drop of paint thinner.

#### *IT GOES ON:*

We recommend that first coats of varnish are thinned with the appropriate solvent and worked into the timber with a short bristled brush. For two-component varnishes special penetrating primers are available.

Two or three coats of varnish should be applied before rubbing down. Varnish should be applied freely and left to flow.

The final coat should be applied with a good quality brush with long, flexible hairs. Varnish can be sprayed but it is advisable to brush the first coat to make sure of penetration.

The 'GUIDE' booklet can be obtained free of charge from International Yacht Paints, 23/30 Canute Road, Southampton.

There can be no doubt that the trouble you take to finish your boat properly will pay off in the long run. So don't cut any corners here — and ensure success.

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## From navy to white...

by Terry Cherrill

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Changing the colour of the hull should not be difficult even when going from dark blue to white. Basically the existing paint work has to be rubbed down, so that it is uniformly matt. The dust should be brushed away and the surface thoroughly vacuumed before repairing any damage in the surface. If bare wood is showing, 'Plastic Padding' (elastic type in blue/white pack) is ideal — drying in fifteen minutes when it can be rubbed smooth. Dents and chips in the paint can be repaired with 'Interpad' which takes 24 hours to harden. All repairs and thin parts should then be given two coats of metallic pink primer, followed by one coat of white undercoat, and two coats of white yacht enamel to the complete hull.

When thoroughly dry, a coloured flash can be lined in, using margins of masking tape, to finish a nice looking job.

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## Blisters

by Leslie Kinsman

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Having built M42702 I was greatly disappointed to see large blisters appearing beneath the paint on the hull. They were only found on top of the resin. Removal of these blisters showed that the wood primer had not taken. I contacted the paint manufac-



tures (Little Ship) and their Area Representative came round to see the boat. He said I should have used fibreglass primer on the resin areas. This I have done and the blisters have not re-appeared. I checked and found that the paint kits offered with the boat do not contain fibreglass primer, and no mention of using this primer is made in the instructions manual.

Smaller blisters also appeared under the varnish (Spinnaker Polyurethane) on the resin areas inside the boat — in this case the manufacturers of the varnish have suggested removing the blisters, letting the resin 'breath' for a week or more, and revarnishing.

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## Sail cleaning

by Peter Bateman

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Professionals always seem to make the job look easy and this is how they remove stubborn dirt from sails at the Bruce Banks loft. Place the dirty part of the sail on a clean dry surface and apply 'Swarfega' by hand, rubbing into the sail with a circular motion until the dirt begins to lift. Then apply a further liberal smear and leave for fifteen minutes before washing off with fresh water.

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## Repairs temporary ...and simple

by Walter Maxfield

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### TEMPORARY

When a hole in your boat is above the water line a quick and easy repair can be carried out by the use of 'Fablon', the plastic self-adhesive sheet which many of us use in the home to decorate shelves, etc.

First, you must make sure that the area around the damage is DRY, this is very important. With a hole of say 2in x 2in, (50mm x 50mm) dry the area by wiping off all the water and then rubbing briskly with a dry cloth. Next sandpaper say 3in (76mm) all round the hole, using a fine grade paper.

Wipe off the dust which you have made. Cut your 'Fablon' to barely cover the 'sand-papered' area. Remove the paper backing and stick on your 'Patch', easing out the air bubbles. You may use as many thicknesses as you like, but 2 or 3 should be ample.

I first learned of this repair at Llandudno from Harry Taylor and Peter Barnes.

Thank you, Gentlemen, your tip really works!

### ... AND SIMPLE

We've all heard it — that crack as *his* gunwale hits *our* plywood, and when we come ashore there's a hole you could get your fist in straight through our boat.

If you know how to repair it, then this article is not for you, but if you carry on reading, you may at least add to your vast knowledge.

Let us assume that the hole is in the fore-transom, and it measures 4in x 1½in (100mm x 40mm) if, as in this case the hole is oblong, then its shape is O.K., but should the hole be square, then it should be made oblong.

First, don't worry about the ragged edges, these will 'key' better to the glue. Our intention is to get a patch *inside* the tank without removing the tank top.

Your patch should be made to overlap the hole by 1in (26mm) all round, making sure that it will go through the hole easily (now you see why the hole is oblong). Clean all splinters, etc. from the inside of the damaged area, as this patch must be a snug fit to the inside surface. Next, put the patch over the *outside* of the hole and ensure that it overlaps by, as I said before, about 1in (26mm) all round. Now draw around it. Between the pencil line you have just drawn and the edge of the hole, drill a series of holes to take ½in (13mm) No. 6 wood screws, and countersink them lightly. The holes could be 2 in the top and bottom edges and 1 at each end in this case.

Now for the Patch. In its centre screw a 1in x No. 8 wood screw. Make sure that it just 'points through' the other side, this is to ensure a good hold. Tie a piece of light cord to this screw, using a Clove hitch. Holding the cord firmly, drop your patch in through the hole.

Twist the cord until the patch is in the



correct position, over the hole, and with the cord coming from the *centre* of the damage your patch should cover all the screw holes you drilled before, and also lie reasonably flat with the inner surface. Carefully remove the patch from the hole, as this was only a 'dry run' to see that everything was in readiness for the operation.

Mix your glue, and have your screws and screwdriver to hand. Now, completely cover the patch with glue, yes, *completely*. This will waterproof the inside. Carefully insert the patch through the hole, keeping tight hold on the cord. Twist the patch into position, and when you are satisfied that all the screw holes are once again covered, pull the cord tight and hold it.

Begin to screw your screws in carefully, and after the first one holds the patch, put in one opposite, and so on until they are all in good and tight, but be careful not to over-tighten or they will slip. Remove the cord and the 1in No. 8 screw.

You should be in a position where you now have a patch screwed to the *inside* of the hull, and all that remains is to build up the hull thickness.

As I said before, don't worry about a good joint, all you have to do now is to apply more glue and screw in your 'make-up' piece to the patch. When the glue is dry fill up any joints or indents with 'Plastic Padding,' or something similar, sand off and paint in the usual way, and you should have an invisible repair!

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## Self bailers

by John Taylor

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Experience has shown that a self bailer is a valuable asset in the Mirror Dinghy, both from the safety angle and for convenience. It is far safer in rough weather if the crew does not have to lean into the boat to bail when he should be 'sitting out.'

The convenience aspect is obvious. The most suitable type of bailer is the wedge type such as the 'Elvstrom Super Mini,' or the 'Holt Allen' bailer. The former is made from stainless steel and has a small flap to prevent water entering when the boat slows down, the latter has no flap and is cheaper,

made from plastic. Both types work satisfactorily when the boat is moving fast enough for any water to come in over the gunwale. There is another type of self bailer in which a plastic 'tube' projects through the bottom of the boat; as this type does not fold away, if the boat is grounded, damage can occur to both boat and bailer unless you always remember to raise it before coming ashore.

One self bailer is sufficient for the Mirror Dinghy. It should be fitted half-way between the centreline of the boat and the floor-board, with the rear edge level with the rear of the thwart. In this position, it collects most water and is safe from large feet.

Even if a self bailer is fitted, a hand bailer should still be carried, tied into the boat in case of capsizes.

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## Give your boat a fix

from 'Buccaneer'

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A hypodermic needle is a useful tool for getting glue or resin (not too thick) into a split or opening joint, as you can get whatever you're using right where it can do most good and fill the cavity up from the bottom. Try chatting up your local friendly District Nurse who may be able to let you have a second-hand disposable syringe and needle — If you can convince her of your innocent intentions! *Warning.* Some of these synthetic resins contain poisonous substances which can be washed off skin, but which can be a bit disconcerting circulating in the bloodstream. You will also appreciate that it is not a bad idea to keep your needle out of the reach of Little Willie.

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## Nail-heads

Question-with answer by Peter Barnes

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I am finding that on the hull of my Mirror the nail heads are beginning to stand out. They look terrible, they are also showing up from under the fibreglass on the buttstrap. I am finding a lot of copper nail-heads showing (still covered with paint) as though they had not been knocked right in.



What shall I do about it, other than worry about the extra drag under the water — not that the bottom of my boat is really smooth compared with some?

Where nail heads are showing through the outside of the hull, the only cure is to rub down with 'wet and dry' on a block to the wood, or fibreglass, and then repaint. The main thing here is to ensure that nail heads are level with the surface. Unfortunately this is one place where prevention is the only cure. When building the Mirror, the nail heads, whether copper or brass, should be driven below the surface with a custom made punch, and filled with stopper before painting or varnishing. To do this when the decks are on is near impossible as a support block for hammering can't be used.

## Hull repairs

by Alex Scott

In permitting sailing on certain reservoirs, many Water Authorities have released fine stretches of water for yacht clubs. However, being situated generally in urban areas, this has also brought its problems of vandalism and damage. I was a recent sufferer of this twentieth century malaise when my Mirror was rolled on its trolley down a 30ft bank at the Island Barn Reservoir, the premises of the Walton-on-Thames Yacht Club. While no damage was immediately apparent, closer examination revealed that the bottom had been holed on the underside of the boat with a flap of ply about four inches square being pushed inwards in the forward buoyancy compartment.

To effect a repair, I had several choices open to me and I wrote to Bell Woodworking making several suggestions. I received a most helpful letter from Mr. Finn, a director of the company, whom I rang later to discuss the problem and arrive at the best solution.

The procedure I adopted was as follows:—

1. Clean all paint off damaged area and mark out an oval on the hull slightly larger than damaged area. Larger dimen-

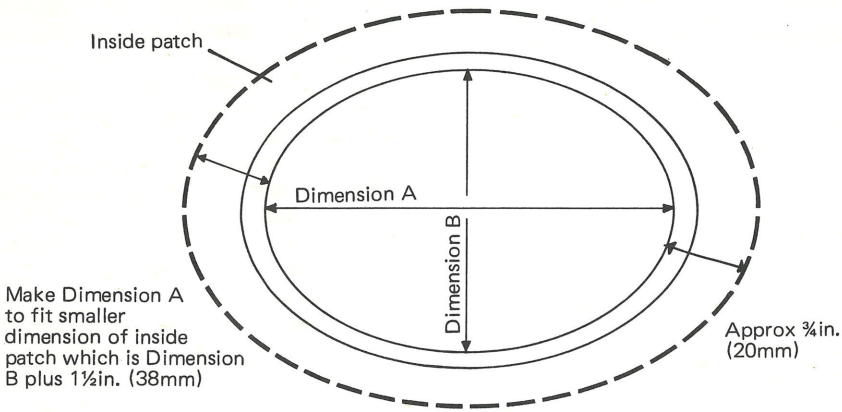
sion of oval to be equal to smaller dimension plus 1½in. minimum (30-35mm).

2. Cut out damaged area to oval shape as drawn and chamfer edges with coarse file at 45° approx, tapering to smaller diameter inside.
3. Sand around oval hole inside hull to remove paint and roughen surface. This can be done by making up a sanding disc out of a plywood disc small enough to go through hole. Glue sandpaper on this and mount upside down in a drill arbour assembly. Fix in small power drill and sand by pulling upwards, working around oval hole.
4. Inspect sanding using hand mirror and torch. Repeat sanding as necessary.
5. Remove chippings and sawdust from inside hull using vacuum cleaner hose.
6. Cut oval patch for inside of hull approx. ¾in. (15-17mm) larger than oval hole. Cut patch for hull skin to fit hole; chamfering carefully to match as exactly as possible. I used 5mm marine ply.
7. Place skin patch over inside patch and mark the latter with pencil line showing approx. ¾in. (15-17mm) all round. Drill ¼in. (6mm) hole through centre of both patches with them clamped together.
8. Thread copper wire through buoyancy drainage hole and 'fish up' through damage hole. Solder head of a 1/8in. (3mm) brass bolt preferably 1½in. (38mm) long to copper wire.
9. Paint inside edge of hull around hole with hardener using pad of hardener on stick. Paint mating surface of inner hull patch with glue outside pencil line. Do not paint inside pencil line.
10. Thread inside hull patch on to brass bolt and run on nut two turns to avoid losing bolt and to facilitate handling. Push patch inside hull and turn round until pencil mark (step 7) registers with hole. Tie piece of string or thin wire below nut and pull to hold patch in position. Run off nut and thread on a piece of pre-drilled scrap ply at least 1in. (25mm) larger than hole. Run on nut and tighten. Remove string and leave to set. Before tightening make sure inside patch has not moved and that pencil line is in register with hole.

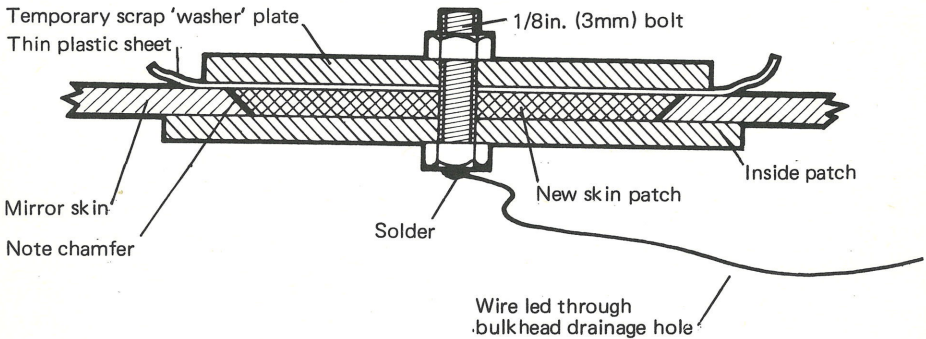


## PLAN

(with new skin patch and 'washer' plate removed)



## SECTION



11. When set, slacken nut and remove scrap ply while holding bolt to avoid losing it, and run on nut again loosely. Clean off any surplus glue. Offer up skin patch to check register by removing nut and holding bolt then running nut back hand tight. If out of register, enlarge the  $\frac{1}{4}$  in. hole in skin patch to allow good seating. Remove patch. Apply glue generously and hardener. Fit patch in hole. Fit on a piece of thin plastic (from a sandwich bag) then scrap ply and tighten nut. The plastic saves the scrap
- ply being stuck to the outside of the hull by surplus glue squeezed out of the hole when pressure is applied. Allow to set.
12. Remove nut and scrap ply and plastic. Push bolt through into hull and retrieve by pulling wire through drainage hole. Fill bolt hole and make good with marine stopping. Sand down to level as necessary.
13. Apply two layers of thin fibreglass (I used a 'Holts' car repair kit) and resin. Sand down, prime and paint.



# Care and maintenance of Terylene sails

by ICI Fibres

## Washing

Small sails can be washed in the bath and large ones on a clean concrete wash-down, using a scrubbing brush and hose where necessary. TERYLENE sails should be washed in water as hot as the hand can bear and containing soap and washing soda, or any proprietary brand of liquid detergent. At localised areas where soiling is particularly heavy neat liquid detergent can be applied and the treated sail left overnight before washing.

If general soiling is persistent and difficult to remove, the sails may be steeped overnight in cold water containing 1 lb of sodium metasilicate/gallon (100 g/litre). Stainless steel, porcelain or enamel vessels should be used and *not* vessels made of aluminium or galvanized iron. Do not allow the solution to come in contact with galvanized luff wires, hands or alloy slides. After this treatment the sail should be drained but not rinsed, and then given a warm handwash as described above, with light scrubbing.

## Removal of Stains

The suggestions below refer to white undyed sailcloth material. Coloured sails which have become abnormally stained should be dealt with by an experienced finisher or dry cleaner, especially when solvents or bleaching agents are involved in the stain-removal technique. Stains should be removed as soon as possible after they appear.

**Blood.** Soak the stained portion in cold water containing half a cupful of ammonia to half a gallon of water. If residual stains are still present after this treatment, damp the stain with a 1 per cent solution of pepsin in water acidified with a few drops of dilute hydrochloric acid, allow to stand without drying out for 30 minutes, and then rinse thoroughly.

**Mildew.** Scrub lightly with a dry stiff brush to remove as much of the mould growth as possible and then steep the stained portion for 2 hours in a cold solution of bleach (sodium hypochlorite) at a strength of approximately 1 per cent available chlorine. A proprietary brand of bleach such as Domestos may be used, 1 part of Domestos being added to 10 parts of water. Wash thoroughly in water and repeat the treatment if necessary. If after the final washing there is any residual smell of chlorine this may be removed by immersing for a few minutes in a 1 per cent solution of sodium thiosulphate (photographers' hypo). Rinse finally with water.

**Oil, Grease and Waxes.** Small stains of this nature can be removed by dabbing with trichloroethylene or by the use of proprietary stain removers. Heavy staining is best removed by brushing on a mixture of detergent and solvent. This can be prepared by dissolving 1 part of Lissapol NX in 2 parts of toluene. Alternatively a proprietary brand such as Polyclens may be used. These 'solvent/detergent' mixtures should be brushed well into the fabric, left for about 15 minutes and then washed off with warm water. A well ventilated place should be selected for carrying out this treatment, and precautions should be exercised if the solvents are





inflammable. These treatments will remove oils, greases, petroleum jelly and most lubricating mixtures, but they will not remove stains caused by the fine metallic particles often associated with lubricants. Such stains can be removed by methods described below after the oil or grease has been eliminated.

**Metallic Stains.** Stains caused by metals, in the form of rust, verdigris or finely divided particles, can be removed by either of the following methods (do not allow the solution to come into contact with galvanised iron or copper):

- (a) Immerse the stained portion in a 5 per cent solution of oxalic acid dissolved in hot water (1 oz of oxalic acid dissolved in each pint of hot water). The hands and fabrics should be washed very thoroughly after using oxalic acid solutions, as this chemical is poisonous.
- (b) Immerse the stained portion in a warm solution containing 2 parts of concentrated hydrochloric acid per 100 parts of water. Wash off thoroughly with water.

**Pitch and Tar.** Organic solvents such as perchlorethylene, trichloroethylene, trichloroethane (Genklene), solvent naphtha or white spirit may be dabbed on to the stain to effect removal. Again care should be taken to work in a well ventilated

position, and due precautions should be observed when using inflammable solvents.

**Paint and Varnish.** Dab the stain first with trichloroethylene and then with a mixture of equal parts of acetone and amyl-acetate. Shellac varnish is easily removed with alcohol or methylated spirit. Paint strippers based on alkalis should not be used on TERYLENE.

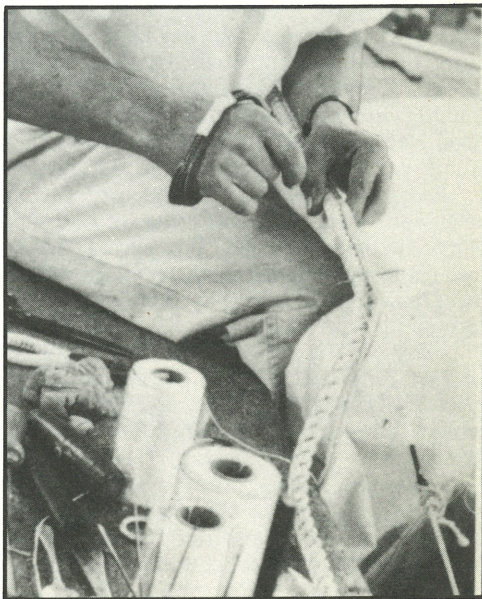
### Storage

All sails should be folded or rolled in a manner which avoids sharp creases as far as possible. Sails made from TERYLENE polyester fibre should be stored under well ventilated, clean conditions, and dampness which may encourage the growth of mildew should be avoided as far as possible. While mildew growths do not affect the strength of TERYLENE fabrics, they can cause stains which are unsightly and not readily removed.

*All information in this section is given in good faith, but without warranty. Freedom from patent rights must not be assumed. 'Lissapol' and 'Genklene' are registered trade marks, the property of Imperial Chemical Industries Limited.*

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# Replacing a transom

Question-with answer by Walter Maxfield

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I find that the outside layer of the plywood used for my transom has rotted in a number of places, mainly above the waterline, and obviously repairs are required forthwith. I propose stripping out the rotten wood, filling to the level of the surrounding sound wood with exterior grade wood stopper and covering the whole of the transom with a thin sheet of marine ply glued in place with epoxy resin — and replacing the pintles. Would you consider this to be a satisfactory solution or have you any other suggestions. In addition, the fibre glass tape attaching the skeg to the hull has broken on one side — would I be correct in assuming that the repair could be made quite satisfactorily by cleaning off the old paint and tape and retaping, or could retaping be carried out over the paint?

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The repairs to the rotting transom on your Mirror are quite straightforward, and you can put an 'extra' sheet of marine ply if you wish, *providing* that the boat measures after the job is completed! The first thing to do is to remove the pintles and rudder retaining clip. This done, clean off *all* the paint from the transom, and also for a distance of about 2in. (51mm) on each side and bottom.

Release the brass keel-band on the transom and bend it carefully out of the way. Remove the rotting ply and, as you intended, fill in these holes to the level of the surrounding timber with Exterior Grade Wood Stopper. Take your new ply transom and liberally glue it to the existing one, adding screws about every 6in. (153mm) *all over* so that the ply is well and truly fixed to the boat, these screws should be ½in. No. 6 brass.

When this has set firmly, plane off all the edges to conform to the shape of the hull. Put fibre-glass tape and resin on the bottom and sides so that the joints are perfectly sealed.

Finally, paint, and refix your pintles, rudder clip and keelband, and there you are — another BRITISH triumph!

Now to the skeg:

Remove the old tape and the surrounding paint. Clean off the old resin, and when the timber is *dry* renew the tape and finally paint.

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## Laying-up

by Stuart Walker

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As the colder days creep in I have no doubt that the majority of us retire to the fireside and the television, but I hope you remember your boat's welfare. If it is stored properly, life is made a lot easier at the start of the next season.

If you are a salt water sailor, the hull should be washed thoroughly inside and out. Even when stored in a reasonably dry place, any salt crystals on the hull absorb moisture from the atmosphere, thus keeping the hull damp for long periods in cold weather. Pick a dry place for this job and leave the corks in the buoyancy tank drainage holes while washing. Dry the boat with a cloth and remove the tank corks (also remove ventilation hatch covers if fitted) and leave the hull to dry thoroughly right way up. In this position you can make sure that the tanks are completely dry. I do this, using pieces of absorbent cloth, and poke them *part-way* into the tank draining holes to ensure that no water is left in those awkward bottom corners. To do this properly, the boat must be on an even keel. This is a particularly important job if the boat is to be stored upside down. Even small amounts of water lie on the underside of the decks and cause staining at cracks and nail holes.

The hull should preferably be stored in a dry building. A reasonably sized garage can be made to accommodate both car and boat by suspending the latter from the roof and allowing at least the car bonnet to go under the boat. Please make sure that the garage roof is sound first. In my case the weight of the boat helps to stop the roof blowing away in the winter gales!

If you are forced to leave the hull out-



side, lie it upside down on two battens of wood so that it is well clear of the ground. Make sure that the battens are level and that there is no tendency to twist the boat. For weather protection, at least put a weighted board over the centre-board slot, although it is better if the boat can be covered sufficiently to keep off snow and rain. Any covering must allow a free flow of air all round the hull, i.e. a plastic sheet should not be allowed to lie directly on the hull.

You may wish to store the boat on the road trailer, but I would suggest that you only do this if no other method of storage is available. If this method is used there are two main points to watch; (a) that the boat is supported at strong main points e.g. on the keel just forward of the stowage bulkhead and two points on the line of the aft bulkhead as near to the sides as possible; (b) any boat cover should be taut to prevent pools of water forming and dripping into the boat and should allow for some through ventilation.

Now the spars — the main thing is that these should be supported evenly along

their length. They can be hung in the garage by rope slings from the rafters or any evenly spaced supports.

The sails will benefit from a wash to remove salt and sand. When completely dry, store them with the minimum of folding, any folding being done loosely. The sheets can also be washed.

The last items requiring special attention are the centreboard, which must be stored flat to prevent warping and the shrouds, which should be washed, dried and lightly greased. All shrouds, halyards and sheets should be neatly coiled and put in a clean place — polythene bags are useful for this.

While doing all these jobs, it is worth making notes of items needing repair, frayed sail stitching or damaged fittings and also any modifications that you thought about during the season. These jobs can be attended to during the winter ready for a quick start to the season.

One other task for the winter, if it has not already been done, is to have the boat measured. *Don't wait until the spring rush or two days before the Area Championship!*













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